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AUTHOR	Singer, Jerome L.; Singer, Dorothy G.
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ABSTRACT

This study examined the patterns of ongoing play manifested over a year's time by 141 three- and four-year-old boys and girls at nursery schools and daycare centers. The relationships between such play and concurrent language usage and the child's patterns of television viewing at home were examined during this period. Parents of the children were also randomly assigned to one of three intervention groups or to a control group. Intervention groups received training either in stimulating the children's imaginative play, stimulating the child's cognitive and language development, or in controlling the child's television-viewing frequency and encouraging more discriminating use of the set. The control group merely kept logs of children's viewing as did the other parents. Based on this research, eight recommendations were made. Family interview data relating to home organization, daily routines, patterns of discipline, parental aggressive behavior, and traumatic events or stress, suggest that the laxity of control over TV viewing and a general lack of alternative interests by the family may expose children to greater influence by the TV programming and yield the danger of more initiative aggressive or hyperactive behavior. (Author/JEG)

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Progress Report #2
May 1978

Television-Viewing and Imaginative Play in Pre-Schoolers: A Developmental and Parent-Intervention Study

Co-Principal Investigators:

Jerome L. Singer, Ph.D.
Professor of Psychology
Yale University

Dorothy G. Singer, Ed.D.
Professor of Psychology
University of Bridgeport and
Visiting Research Scientist
Yale University

Yale University Family Television Research and Consultation Center
Department of Psychology
Yale University

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The Research Problem:

The research project described herein represents an attempt to study the ways in which the frequency and patterns of television-viewing by 3- and 4-year-old children become influential in their spontaneous imaginative play and in other forms of social behavior observable during a period of at least a year of repeated behavior samples in nursery school or day care settings. The research project has two major objectives:

(1) It seeks to examine the relationship between a particular diet of television viewing which a child manifests within its family setting and the ways in which such exposure to the medium may become expressed in the major activity the child shows during his third to fifth years of life - its ongoing patterns of spontaneous play and imaginative activity. The study has, therefore, been following samples of children three and four years of age for a year, tracking early language development, the beginnings of imaginative play, and also relating such behavior which have been unobtrusively observed to the frequency and patterning of the same children's television viewing as recorded in a series of television log-keeping periods by their parents. The extent to which the specific influences of the child's natural-occurring TV viewing have been incorporated into prosocial or destructive behavior manifested by the child can be evaluated through systematic monitoring of spontaneous solitary or group play.

(2) A second major objective of the study is to compare intervention approaches with families to determine whether it may be possible to provide parents with information and methods that can modify the television-viewing patterns of their children. The intervention is designed to minimize potentially noxious effects, or to make optimal use of the constructive aspects of the television medium. An attempt is also being made to provide parents with skills in stimulating the imaginative play of children to determine whether such play can immunize children to the more aggressive influences of television, while helping them to use imaginative components from the medium more effectively as part of their own play and social growth.

In effect, then, the research proposal involves basic scientific examination through a longitudinal study of the development of imagination of children in relation to their television-viewing patterns and an intervention strategy designed to see whether particular approaches to families may be differentially affected in modifying the more noxious influences of television-viewing on child development.

Procedure:

A detailed account of the general procedure employed in this study including the development of participant samples, development and administration of research instruments, training of observers, development of intervention groups and intervention procedures and methods of data collection for television logs, observations and language analyses is presented in Progress Report #1 dated June 15, 1977. A step-by-step chronological listing of the procedures of this study is presented as Appendix 1 of the present report bringing up to date the chronological account provided in the earlier progress report.

As can be seem from the listing of objectives above, the study involves two major divisions, the longitudinal and intervention investigations. The following is a brief summary of the procedures employed in the developmental phase:

Participant Sample:

There were 141 children who served as the subjects of this investigation. They were enrolled in eight nursery schools or daycare centers within the New Haven area, largely within city limits. Since there was a one year observation period of these children, a number of the four-year olds moved on to kindergarten, private and public, and in some instances, some of the three-year olds transferred to other nursery schools or daycare centers. Thus, by the conclusion of the observation period in the Spring semester of 1978, children were observed in 49 separate schools.

Table 1 presents the basic information on the total sample of children. The table is broken down into the four types of groups used in the intervention phase of the study, an Imagination-training group, a Cognitive-training group, a Television-training group, and a Control group. The table also indicates numbers of males, females, ethnic minorities and indicates other background data such as the ages of the children at the onset of the study in January, 1977 and the socioeconomics rating based on the Hollingshead-Redlich five point scale as well as scores on IQ and various imaginative predispositional measures.

In general, the subjects are somewhat above average in intelligence, are drawn from a clearly middle-class sample although there is a sufficient range of lower-middle and upper-lower class subjects to provide meaningful statistical data, and while the sample is predominantly white, there is representation of minorities sufficient to provide statistical analyses.

Pre-Testing:

The following instruments were used in carrying out pre-testing with children in the study prior to the unobtrusive observations of the first probe:

1. Peabody Picture Vocabulary Test (PPVT) - IQ estimate

2. Barron Movement Threshold Inkblot Series - Estimate of imaginative pre-disposition

3. Interview on Imaginative Play (IIP) - Direct questioning of children concerning imaginative play tendencies, imaginary companions, etc.

4. Television-Viewing Patterns - Direct questioning of child on favorite television shows and characters on TV as well as pattern of viewing

Table 1 also presents scores broken down by the four intervention groups on the above measures. Data did not indicate any significant differences across the intervention group. Random assignment was employed to reduce the likelihood that any systematic factors initially at play could be involved in the possible effects of the various intervention strategies.

Observational Variables: (For detailed account of the observational procedures, training of observers, definitions of ratings, and development of reliabilities of independent raters, see Appendices of Progress Report #1 and also Appendix of this report for a detailed account of the development of observer reliability through rater training.)

The basic data of this study with respect to the natural occurring play of the children was obtained by watching children play in nursery school and daycare centers in an unobtrusive fashion. A pair of trained observers watched a given child for a ten minute period and wrote down everything the child did and said during this time. The child was almost always in a "free play" period, ordinarily early in the nursery school day or in the period following lunch. Following their independent recording of the child behavior, the observers, without consultation, rated the child's behavior along 14 dimensions which included Imaginativeness of Play, Positive Emotion or Affect, degree of Concentration, Overt Aggression, etc. The use of the separate raters allowed us to establish the degree of agreement between the raters on the observation of a particular child. A few days later, the child was again observed for a ten minute period of time by two independent raters and comparable ratings obtained. For subsequent statistical analyses, the average of the rating of a child by the two observers was employed as the child's score for that observation period.

The scores used in the study were based on the behavioral variables rated from these protocols as well as the actual language employed by the child which had been recorded verbatim by the observers. Scoring of the language was carried out from the written protocols by trained raters. Since this was a much more time consuming task and involved some months of going through the hundreds of records, separate raters with special training in language identification were employed.

Observational Variables:

The observational variables fall into several classes. These involve overt behavior such as Imaginativeness of Play, Degree of Concentration or Persistence, and Overt Aggression, The pattern of social interaction shown by the child as measured by Interaction with Peers and Interaction with Adults. Cooperation with Adults and Cooperation with Peers were separate categories implying a process of sharing rather than simply communicating by word of gesture or participating in the same activity. Finally, there were a group of variables which attempted to tap the emotions or moods of the children as they played. A general variable called Positive Affect or Emotion was employed in addition to specific emotions including Anger, Sadness, Fatigue, Liveliness and Elation. It is important to note that these variables were rated as much as possible on the basis of actual overt behavior manifested by the child in the form of gross physical movements, facial expression or added verbalization which could clarify the motor behavior of the child. Thus, Positive Affect was represented by evidence of interest, curiosity, smiling and laughing. Overt Aggression was measured by evidence of direct attacks on other children or on property. A list of observational variables is appended.

Language Variables

As indicated above, language recorded verbatim was scored from the children's protocols. The number of utterances and words spoken in the ten minute observational sample served as basic information and scores for Mean Length of Utterances, % Nouns, Pronouns, Adjectives, etc. were calculated for the protocol. More complex forms, e.g. Predicate Adjectives, Predicate Nominatives, % Future Verbs, etc. were also included. Onomatopeia, Imperatives, and Television references were also scored. A list of language variables is appended.

Television-Viewing Logs and Variables

A detailed account of the method of development and procedures for training parents in maintaining TV logs of their children's viewing over two week periods is presented in Progress Report #1.

The TV logs were maintained quite faithfully by parents and returned weekly during each of the four two-week probe periods in February 1977, April 1977, October 1977 and February 1978. Since there were many changes in programming parents wrote in actual shows viewed when the schedules provided them did not conform to what actually was being aired. As indicated in Progress Report #1, parents recorded actual amount of time a child watched a given show, the degree of Intensity (that is observation without distractibility) whether the child watched alone or with others, etc.

The major TV variables drawn from analysis of these protocols included:

Ave. No. of Weekly hours of viewing (Based on mean of two weeks of logs)
Ave. No. of Weekday hours of viewing
Ave. No. of Weekend hours of viewing
Ave. Intensity of Viewing

Program Categories: Cartoons, Commercial TV Children's Shows, Public Television Children's Shows (e.g. Sesame Street); Family Situation Comedies (Happy Days, I Love Lucy); Variety and Game Shows (Gong Show, Donny & Marie); Adult Family Dramas (Waltons, House on the Prairie); Action-Detective Shows (Kojak, Starsky & Hutch, Police Woman, Bionic Man, etc.); Sportscasts and News Broadcasts.

Comparisons of data with Nielsen ratings for the local area were carried out as a check on group patterns.

Intervention Study

A detailed account of the rationale and random assignment of parents to intervention conditions is presented in Progress Report #1. Data on methods of training and training sessions are included.

Essentially, the Intervention sought to determine if active training of the parents in exercises or games designed to stimulate imaginative play might not only produce increases in the spontaneous play of children but might lead to reduced TV-viewing. A second form of active intervention was employed to check on whether intervention alone was beneficial rather than the emphasis on imagination in play. These parents were trained in cognitive games and language-enhancement methods for their children. A third intervention focussed specifically on television-control training for parents. This procedure, suggested more by Social Learning Theory, indicates that providing parents with direct skills and methods for reducing TV-viewing or making it more discriminating should be even more effective than the imaginative stimulation approach. Finally, a control group of parents merely kept logs without family training.

Imaginative Training

Parents participated in three two hour sessions early in 1977 and a booster session in September 1977. They also received training manuals and supplementary materials regularly during the year after their initial training sessions. Training focussed on alerting parents to the advantages of imaginative play for cognitive, affective and social development of their children, on unblocking their own inhibitions to such play and on specific methods for stimulating fantasy play in their children (see D. Singer & J. Singer, 1977 for detailed presentation of methods). Videotape demonstrations of the use of the exercises with pre-schoolers and role-playing methods were employed.

Cognitive Group

This group received essentially the same approach as the above group except that the focus was on conceptual, information-processing and language skills for pre-schoolers rather than on the enhancement of imagination. Videotapes demonstrating particular exercises were employed and parents were also given clues as to how to use material from television programming such as Sesame Street to enhance further language skills. In effect, this group was designed as a kind of control condition providing the parents with useful material to interact with their children around, but not focusing either on imaginativeness or on strict control of television-viewing patterns.

Television-Training

This group was set up to provide parents first of all with considerable consciousness-raising about the role of television in the child's life. Basic social science information on the extent of television viewing and some of its possible deleterious consequences was presented. A variety of television shows were presented on tape to indicate to parents the possible negative or positive effects of these shows on children. A set of criteria were provided for parents in helping them discriminate between shows that might or might not be useful or threatening to pre-school children. In addition, a set of behavioral principles were provided to parents as part of these training sessions and were included within the manuals sent out to help parents. These were designed to help them control the amount of viewing the child carried on and to help the child become a more discriminating viewer.

Control Group

As indicated above, the control group was simply provided with logs on a regular basis. This group as might be suspected was somewhat less diligent in keeping of the logs because of the lack of involvement in a parent training group. Nevertheless, it provides to some degree a baseline against which one can evaluate ultimately the degree of intensive attention to parents by the investigators that might have had some special impact.

Summary of Intervention Training Implications

The Intervention phase of this study represented a first such effort. Therefore a great deal of the value of the procedure lies not only in whether or not the Intervention "works" in any dramatic fashion, but also in the opportunity for developing sets of training materials ultimately suitable for dissemination to other groups; the development of television training tapes which could be used for these purposes; and the availability of feedback from parents on an ongoing basis about the nature of the procedures employed.

An important outcome of the project has already been the development of three extensive sets of materials on Cognitive Training for Parents, Imaginative Play Training for Parents and Television Control Training for Parents. All of these are, of course, greared for parents of pre-school children.

In general, it was hoped that as a consequence of the training procedures, children of the parents in the Imaginative Training group would subsequently show increases in spontaneous imaginative play in nursery school and other behaviors known in the past to be associated with such imaginative play, specifically, increases in Positive Affect, Cooperativeness with Peers and possibly reduced Overt Aggressive behavior. Improved mature language indications could also be anticipated for this group. In the case of the children whose parents received the Cognitive Training, it might be anticipated that there would, perhaps, be improvements shown during the children's play in their language productivity and possibly maturity, but no other specific effects could be anticipated. It was also hoped that the Imaginative Training might lead to some subsequent reduction in television-viewing patterns for that group or at least more discriminating viewing - that is less emphasis on cartoons or violent shows, more emphasis on more mature programming or on educational TV shows. No special effect on television viewing was predicted for the Cognitive group which, in effect, was a control in this dimension. The Television-Training group was designed to see if it would show a general reduction in amount of viewing by the children, subsequently, and also perhaps more discriminating viewing. It was felt that there was at least a possibility that reduced viewing might also be reflected in reduced overt aggression and perhaps some increased evidence of imaginativeness in play.

RESULTS

Longitudinal Study

In discussing the findings in this report, it should be kept in mind that Progress Report #1 in June, 1977 was based on the data obtained for the children from the first two probes, February 1977 and April 1977. The present report is based on the findings for the total of four probes and in effect, is summary data. To save space, no attempt will be made to review in detail the findings of the earlier Progress Report for that first six month period of observations. The present report will provide final data and will refer back to the earlier report for certain types of analyses that were carried out for those periods as they relate to the present findings.

In presenting the results, we shall focus upon a series of specific questions that can arise about early childhood play, its relationship to language and television-viewing patterns. We will take into account, of course, the fact that some of the children were three at the beginning of the study and others four, so that we have data to look at in the year's growth of the three-year olds compared with the four-year olds. Similarly, we can compare the differences in play patterns across sexes as well. We will also be able to look at a number of questions that have been important in general in personality theory in psychology as well as issues relating to the nature of the television medium and its impact on three- and four-year olds.

When do TV-viewing patterns emerge in children?

An important initial assumption of this study needs to be repeated. It was our feeling in choosing children who were approximately three- and four-years old at the outset of the study, that these ages represented the beginnings of television-viewing. A major outcome of our study so far makes it clear that this assumption is simply incorrect in the light of current trends in television watching. Our three- (and in some instances two and a half-year olds) and four-year olds were experienced viewers according to parental reports and quite obviously in terms of the total amount of viewing carried on. While, of course, the predominant types of programming they watched were child oriented shows, the fact remains that the range of programming viewed by these children, some of them barely beyond the toddler stage, included every type of programming available before midnight to the television audience.

While it is true that Mr. Rogers' Neighborhood and Sesame Street were more extensively viewed by the younger children than most other shows, and that cartoons predominated, the fact remains that a very sizable proportion of the viewing time of our sample over the year of observation was devoted to essentially adult programming. We will deal with this issue further below, but it requires mention at the outset because it relates to critical issues currently before the public concerning hours of viewing accessible to children and whether regulation of programming or commercials at certain periods will be effective in reducing drastically children's exposure to a predominantly adult type of program or commercial format.

This issue is heightened further by the fact that hour viewing patterns were after all recorded by parents who might have been expected to want to put their "best foot forward" to some extent. Actually, our checks on this suggest that they did not do this to any great degree, but even if this were so, the amount of adult programming viewing they have reported must be taken especially seriously. If we add to this recognition the fact that our sample is clearly middle-class in socioeconomic status, and that viewing patterns of lower socioeconomic have been shown to be more extensive and more adult oriented (for older children at least) the odds are that a broader and more representative national sample of pre-school children would reveal even greater frequency of viewing and particularly more viewing during later hours and viewing of more clearly adult-oriented programming.

Evaluation of the Reliability of Raters

In attempting to study something such as the normal flow of behavior, a number of critical questions first arise about whether we can, through the use of human observers, gather sufficiently systematic information. An initial question that researchers must ask is whether the two observers independently recording what the children do are actually "seeing" the same events and hearing the same language, or indeed, if they are able to then draw from such observations comparable subclassifications of this behavior along particular dimensions. This issue, that of rater reliability raises an important consideration that must be dealt with. In our research, we have attempted, first of all, to define our behavioral dimensions fairly precisely in advance. We have trained groups of observers, themselves unfamiliar with the overall plan of the study or the specific research questions and hypotheses, to agree in recording and summarizing behavior from written protocols and then from movies of children playing. Finally, the crucial test is the actual degree of agreement between pairs of raters. Progress Report #1 indicated generally satisfactory results in this connection.

For the present report, we have appended a detailed account of training procedures during September for a new group of raters and have described statistical procedures for evaluating the extent to which the training procedures lead to agreement prior to actual observation of the children. Finally, we then report on the degree of agreement in the scoring of behavioral variables following the actual observation of the children in the field during the probe periods. (See Appendix for detailed report).

In general, the results make it clear that training is effective in leading to reasonable degrees of agreement on most variables of the study using a fairly sophisticated statistical method that is rather stringent for assessing this agreement. When the observers moved to actual field situations with the real children in front of them rather than written protocols, their levels of agreement increased considerably and are on the whole, quite satisfactory.

How Consistent are Children in their Spontaneous Play Behavior?

An extremely important issue in our research with pre-schoolers involves the extent to which they show sufficient consistency in their day-to-day behavior. In the late 60's and during much of the 1970's, a major controversy has raged in the area of Personality Psychology concerning the degree to which certain personality traits showed consistency across varying situations or across time periods. The present study provides an opportunity to contribute evidence concerning consistencies in spontaneously-occurring behavior across time for three- and four-year old children. Such data are otherwise relatively unavailable in the literature since most studies of behavioral consistency have been carried out over relatively short time periods, or in the case of longitudinal studies, have begun with older children and have involved much longer time gaps.

The reader should keep in mind the fact that with such young children, the likelihood of behavioral consistency is not very great. The children are already in the midst of a great period of growth and evolution. They are also, because of their immaturity, especially susceptible to all kinds of extraneous influences. Since the observations take place in a nursery school setting, one cannot control whether the same children will be in the group from one day to the next, whether the child had ample sleep the night before or is feeling well on this particular day, whether a sudden disruptive child may appear in a group on this particular day, whether there may be influences from the teacher that might suddenly change the pattern of play from what it was like on the previous day or a few months before.

Given all of these possible influences, we cannot seriously expect extremely high consistency across a couple of days or systematically across a year's time in the children. Nevertheless, because of the fact that we have in effect 8 data points, two apiece in each of the 4 probes, each independent of the other in the sense that they are taken on different days (and as a matter of fact by different observers) it is worth examining whether we can demonstrate any degree of consistency better than chance in the behavior of these children along the dimensions employed in the research.

Table 4 indicates the list of behavioral variables, language variables and the major television-viewing variables drawn from TV logs across the four observation periods from February 1977 through February 1978. The table indicates the number of correlations between each combination of observations, e.g. observation 1 (February 77), observation 2 (February 77), observation 3 (April 77), observation 4 (April 77), etc. By correlating each of these eight observations in every combination with each other, we obtain a matrix which indicates to what extent the scores on the variables for the child at different times, relate back to each other in a comparable way relative to the total group. The percentage of correlations in this matrix significant at $p \leq .05$ are listed in one column of the table. The second column reports on the correlations obtained across the two major divisions of the study, the February and April 1977 probes which were essentially prior to the possible effects of intervention and the last two probes, October 1977 and February 1978 which might reflect Intervention effects. For these correlations, the two observations a few days apart during a given probe were averaged. The data from this table make it clear that there are, indeed, reasonably impressive patterns of consistency in the spontaneous behavior of the children. For Imaginativeness of Play, for example, (a rating based on the degree to which the child introduces elements of pretend and make-believe, transcends the immediacy of time and place) during free play periods 100% of the correlations between the various time periods are significantly better than chance. The correlation between the first and second half of the year's ratings is .385 which is significant at $p < .001$. This is certainly an impressive result.

The findings for indications of Positive Emotionality, smiling and laughing in the child indicate that 50% of the intercorrelations across time periods are significant and there is a correlation between the first two and last two probes of .296, also significant at $p < .001$. Especially high is the correlation for simply the amount of time the child is involved in direct interaction with other children. Here, again, 100% of all of the combinations of time periods yield significant correlations and the overall correlation between the two half-years is .520, $p < .001$. Surprisingly, even for the amount of Aggression rated for the child 50% of intercorrelations are significant and the correlation between the first two and last two observation periods is .297, $p < .001$. This result is impressive because often aggression may be manifested in retaliation to the accidental or intentional provocation of another child. Nevertheless, these data suggest that to some degree we must have some children who are relatively consistently aggressive and that this pattern of behavior is already established by the ages of three and four.

Of the behavioral variables, only Concentration shows no special consistency. This is somewhat surprising in view of other results obtained later in the study, which indicate that children who are likely to watch TV intensively at home are also likely to show concentration during spontaneous play in school. Nevertheless, we obtain no satisfactory consistency across the time periods. Co-operation with Adults and Peers does not show that degree of consistency, but here, since the very definition requires the occurrence of an opportunity for sharing by the child it is likely that the variable is inherently more situationally determined at at any given probe period. Of the mood variables, only the likelihood that the child is sad, downhearted or crying is at chance level of consistency. Again, one might expect that such behavior would be particularly subject to a specific kind of provocation that might not occur again during any of the other observation periods.

If we look next at the language usage by the children, we find consistency only for two very general aspects of speech behavior, the total number of words used during a particular play period or the total number of separate utterances emitted during an observation period. These results suggest that while the child is presumably showing considerable growth over the year's time in the vocabulary and components of language, the overall tendency of the child to speak is already reasonably consistent by ages three or four. That is to say, in a spontaneous play situation some children are consistently more likely to be talking out loud and communicating either about the game to themselves or talking directly to others in the course of the ten minute observation period over the year's time. For number of words, 83% of all of the possible correlations between observation periods were significant and a correlation between the means of the first two and the last two observation periods was .523, $p < .001$. For number of utterances, the results were also 83% and .466, $p < .001$.

Of all the other variables, only one showed significant consistency. This was Total Television References. Fifty percent of the observation period scores for this variable were significant and the correlation between the means of the first two and last two observation periods was .400, $p < .001$. This result suggests that we already may be seeing children who are especially influenced in a regular way by television so that they consistently use words relating to television character or incidents in the course of their spontaneous play.

We can next look at the consistency of television-viewing, frequency and patterning in the children in the study. Keep in mind that this information is based on the actual reports recorded on log sheets by the parents. While it might be argued that we are simply obtaining evidence that the parents themselves put down more or less the same thing for their child from probe period to probe period (and theoretically could have done this even without paying the slightest attention to what the child was watching - that is just to maintain their own consistency) this seems unlikely on several counts. First of all, we did double check as indicated above, and in addition, there do turn out to be significant associations between children's television viewing patterns and their overt behavior as we shall see below. We have already mentioned the fact that consistency in spontaneous play does seem to be associated with the intensity of TV-viewing - that is, the less distractable the child is in watching a TV show, the less distractable he may also prove to be in the course of his play behavior in the nursery school.

Inspection of Table 3 indicates that the correlation between all of the combinations of total weekly TV viewing hours for the four probe periods is significant 100% of the time with a correlation between the first two probes and the last two of .63, $p < .001$. The parents' report of viewing intensity of the child is significant 100% of the time for the combinations of the four probe periods and the correlation is .56, $p < .001$ for the first two versus the last two probes. Parental reports on other patterns such as whether the child watches alone, watches with parents or watches with other adults are also highly reliable in comparable fashion.

If we next look at the kind of TV shows the child is watching, we find again similar consistencies. Thus, the results indicate that 100% of the combinations of probes yield significant correlations for the viewing of Cartoons with a correlation between the means of the first and last two probe periods of .769, $p < .001$. For the viewing of Situation Comedy, one gets a comparable result with 100% of correlations significant and with an r of .81, $p < .001$. For the tendency to watch Adult shows, the data are equally strong with 100% of possible correlations significant and with an r of .72, $p < .001$. For the viewing of the Action-Detective (violent) shows, again there is 100% significant correlation and an r of .35, $p < .001$ between the first and last observation periods. Indeed, the weakest evidence of consistency is on the viewing of children's shows such as Captain Kangaroo or other programming directed specifically at children and appearing on commercial networks. Consistency of watching the Public TV educational shows is relatively high with an r of .51, $p < .001$ between the first and last two observation periods.

In general, therefore, we seem to be finding, again, a rather considerable consistency in the frequency and in the pattern of children's viewing of television. Keeping in mind that we are dealing with three- and four-year old children over a year's time, we cannot avoid the implication that rather well established habits are already discernible in these children. This is the kind of evidence that suggests the serious limitation to our starting assumption that three-year olds would, indeed, be novices who are just beginning to expand their television-viewing patterns.

Another indication of the extensive consistency that the children are showing can be mentioned. We will subsequently discuss data concerning the role of the imaginary playmate which many children develop in the period between ages two and a half and five. For our purposes now, it is sufficient to indicate that parents' report that the child has an imaginary companion turns out to be relatively good predictors of the extent to which the child will, in the course of his own spontaneous play during nursery school, show evidence of imagination or Positive Emotionality, Cooperation with Peers, extensive Language Usage. If we rely on the child's own self-report at the time of the initial interview in January 1977 about his imaginative companions, we obtain somewhat similar results. Again, when we see patterns that cross from home situations and that are based on the personal observation of parents in very different settings and then recur during spontaneous play of the children, we have some greater evidence that important features of play behavior have already become established with moderate but identifiable consistency by ages of three and four.

Developmental Patterns of Play Behavior, Language and Television-Viewing

We can next ask what particular types of spontaneous play behavior or features of language or patterns of TV-viewing show growth across the year's time for these three- and four-year olds. Naturally, one should expect growth in many areas of behavior just as there are obviously tremendous changes in physical growth and motor coordination for children during the years between three and four or four and five. There may, however, be differential growth rates for certain patterns of play behavior or language and for the orientation to television which have never been looked at systematically with samples of this size before.

Table 4 indicates the averages separated by boys and girls and by initial age, three or four, for subjects. Keep in mind that the intervention, that is to say the training of parents, has taken place in the period from April through September and therefore, any possible changes influenced by parental training of children may be coming into play here. We will look more closely at specific effects of intervention later.

Inspection of these tables and also statistical analysis of age and probe period effects on scores in these variables indicate that there is relatively modest evidence of growth on the behavioral ratings. It is, of course, possible that since ratings were carried out by different observers and they themselves had no sense of continuity of a given child, they might have been making their ratings relative to the current pool of children. Therefore these ratings may be relative rather than absolute. We are currently looking at the actual protocols and detailed descriptions of the play behavior and of the imaginative performance of the children and a more molecular analysis of specific play patterns which are rated as imaginative may reveal more clear evidence of growth patterns. The four-year olds, boys and girls, show considerably more make-believe and imaginative play than do the three-year olds and that there is a general trend towards increase, but that it is considerably variable. Especially puzzling is the drop in imaginative play for four-year old girls, a finding which is also consistent with a surprising drop in their language usage during the fourth probe. At this point, it is not possible to determine whether we are witnessing perhaps a change in play style which the girls are evincing.

A variable like Concentration clearly shows an increase for the boys even with some variation if we divide the four probe periods into first and second halves. This result while also evident in the three-year old girls, again does not show up in the four-year old girls because of the puzzling drop in Concentration during the February 1978 probe. The finding of an increase in Concentration is also reported in the data of parents on the Intensity with which the children watch television. Thus, the degree of concentration which the children show at home while sitting in front of the TV set does also seem to increase somewhat roughly like the amount of concentration they show while spontaneously playing in the nursery school. We would not necessarily expect any particular changes in the emotional variables with age. We do find some trend toward increased Cooperativeness across age periods especially for the younger girls.

Some sex differences may be mentioned at this point. In general, the boys seem to play more imaginatively than the girls although these results are not very dramatic. Nevertheless, they are statistically significant over the four probe periods for the variable of Sex ($p < .015$). There is as has often been noted, a sizable difference in aggression manifested by boys and girls with, again, a highly significant result across the four probes with the boys showing more aggression than the girls.

With respect to language development, it is clear that obviously three-year olds are less advanced than four-year olds and that girls initially in our study showed considerably more language than boys. The evidence indicates that boys increase significantly more than girls do during this period in number of utterances and in number of words used during the probe period. Inspection of Figure 1 indicates, for example, that if we look at the number of words used during ten minutes of spontaneous play, four-year old boys are significantly higher than three-year old boys who use only about 60 words during a ten minute period compared to more than 100 by the four-year olds. Four-year old girls are obviously far above the boys using close to 130 words during the period while three-year old girls are speaking approximately on the average of 18 more words during a ten minute period than the boys. What follows, then, during the year is a dramatic acceleration in language for the three-year olds of both sexes with an even more striking increase for boys than for girls. By the fourth probe, the initially three-year old boys use actually somewhat above the number of words spoken by the four-year old girls who showed a puzzling drop mentioned before, while the initially three-year old girls are just slightly ahead of them. Indeed, the acceleration is marked and the contrast

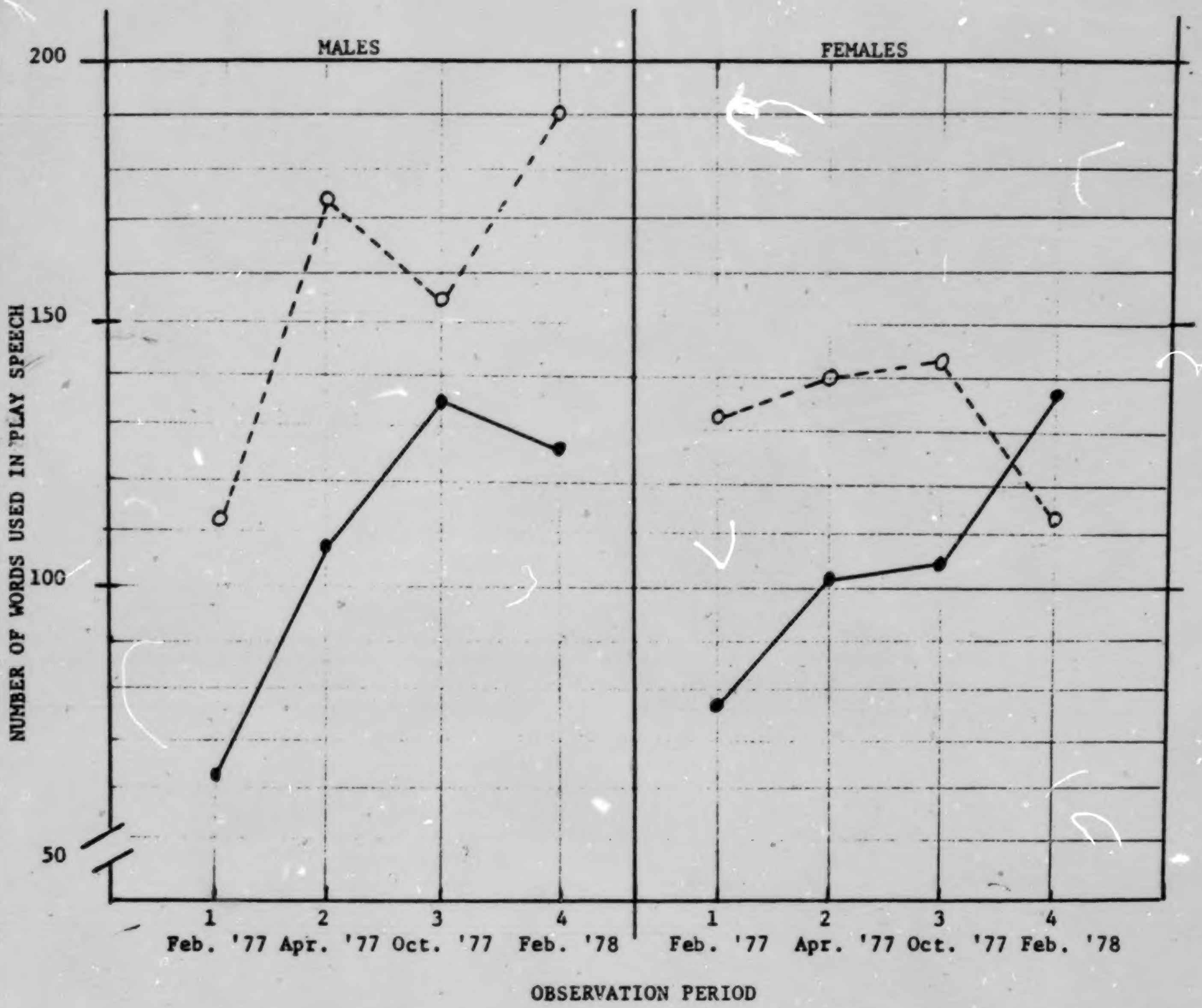


Figure 1. Age by Sex by Observation Period Trends for Number of Words Used in Play Speech.

○- - -○ Four Year Olds ●——● Three Year Olds

	Observation	1	2	3	4
Males	3	62.1	107.3	134.9	124.1
	4	112.3	175.7	154.9	190.9
Females	3	77.2	101.2	103.8	112.0
	4	132.2	140.2	143.5	137.9

between the initially four-year old boys and four-year old girls is so great because of the drop in this fourth probe that we see the four-year old boys speaking approximately 190 words in a ten minute period while playing, while the four-year old girls are speaking only 112.

In general, language data suggests a much greater spurt for the boys during the year's time and the indication that for girls who are now five-years of age, they may be entering into a new phase of socialization that leads to less overt verbal behavior during spontaneous play, less spontaneous play activity and the other indications that sets these girls having started initially well ahead of the boys are now ready for a more organized kind of experience. It may also be that certain socialization pressures on girls are also beginning to emerge. In general, this pattern seems to go along as we shall see below with a change in television-viewing by the older girls.

Table 7 indicates the pattern of television-viewing for the subjects divided by age and sex groups for total viewing and also for type of program watched. The data presented dramatic contrast between the sexes. Boys at four are generally heavier watchers than boys at three and while both groups declined from an initially somewhat higher level (perhaps due to experimental influences) the initially four-year olds by the end of the fourth probe are watching somewhat more on the average than the initially three-year olds. The girls, on the other hand, show a rather different pattern. Initially, three-year old girls are even heavier viewers than boys of the same age, but there is a decrease in the viewing trend so that four-year old girls are watching far less than four-year old boys and by the last two probes, their rates of viewing are by far the lowest of all of the groups. Again, we find this puzzling change in behavior patterns of the four-year old girls.

We have some indication that by the age of five, girls are, indeed, beginning to be socialized more and drawn into relationships with their mother. For example, four-year old girls show an especially large drop in Saturday morning TV-viewing, while four-year old boys are showing a relative increase in amount of time spent viewing at that hour. Inquiry from parents suggests that mothers are taking girls along on shopping excursions leaving boys behind to watch TV. In general, we may be, again, picking up part of a change in the orientation of the girls toward a more clearly identifiable maternal identification around age five. For some reason, this seems to be reflected also in the change of language usage and in the spontaneity of nursery school play.

In looking at television effects across the four probes, we cannot avoid consideration of seasonal variation. It is very clear that the lowest TV-viewing for our sample came during the April probe when the children were much more likely to be outside playing. Unfortunately, study design did not permit sampling of a sufficient range of seasons to balance off this dramatic effect. Still another accidental factor must be taken into account. While in general we see an overall drop in television from the initially high levels (perhaps as a consequence of some experimental influence on the parents), the blizzard of February 1978 shut down schools and kept children indoors to a greater extent than even was the case in the previous February. Keeping that in mind, the relative drop in viewing against that initially high level at the beginning of our study may suggest that some possible experimental effect is indeed operating.

Table 4 also presents the data on type of programming watched by the children during the year. It is evident that for boys, if anything, there is an increase with respect to Cartoons in the percentage of boys watching these within each age group over the year and across age groups so that it is clear that as boys get older in the period between three and five they spend an increasing amount of time watching television cartoons. With respect to Children's TV shows, the results do not reflect any great increase as a function of age. For girls, there is also a more modest increase in television cartoon viewing and no really special effects with respect to children's shows. Boys show an initially very high level of watching programs like Sesame Street and Mr. Rogers at both three- and four-year old levels. There is a trend towards a decrease in the watching of these shows by the older boys, however. For girls, there is a high rate of watching such shows for the three-year olds, but a fairly steady drop for the girls, although the girls in general tend to watch educational television more than the boys.

While the children do not spend a large number of hours watching the Action-Detective shows during the week, it is clear that a majority of them do watch such shows and that there are no really sizable changes for the boys in the pattern of such viewing. Girls do show a distinct decline in the watching of these more violent TV shows from age three to age four or from age four to age five. With respect to viewing trends, again the four-year old girls show a decline in the amount of time spent watching TV with parents or other adults compared to the three-year olds while the change for boys does not reflect such a pattern clearly. Boys do show an increase with watching with siblings while girls show a decline in this respect.

In general, the developmental trends with respect to television-viewing are somewhat masked by major seasonal variations with indications that children are more likely outside playing during April and October and show the least viewing at those times. Nevertheless, our subjects, who at the end of the year have reached the ages of four or five are averaging four hours a day of viewing and this is approximately what the average is for older children according to earlier statistical reports. It seems clear that the television habit as suggested above has been well established for these children. A surprising amount of their waking day is spent in TV-viewing.

The Dimensions of Spontaneous Play in Pre-Schoolers

A major objective of this investigation was to examine the characteristics of ongoing play in three- and four-year old children. There has been surprisingly little systematic research particularly over any extended period of time which has looked at the natural occurring play behavior of young children. Our intention was to use this set of behavior as the basic medium for evaluating evidence of the influence of television upon the developing child. In doing so, it was especially necessary to devise a set of definitions of categories of behavior which could be extracted from the flow of behavior and used for further quantitative analysis. As indicated above we placed our emphasis on relatively observable behavior including imaginativeness as an index of the child's capacity for generating transformational sequences - that is introducing elements into a situation that were not immediately given by the physical environment. An extensive discussion of the presumed value of imaginative play for child development has been presented elsewhere (J. Singer & D. Singer, 1976, J. Singer, 1977).

We are also interested in the social interaction patterns of the child as manifest either in antisocial behavior such as aggression or in sharing and what have been called prosocial behaviors such as cooperation with adults and with peers. In addition, we sought to evaluate the affective or emotional state of the child. There is an increasing body of research which suggests that human beings possess a limited but relatively differentiated set of specific emotions which are themselves closely related to the information processing tasks which confront the person (Izard, 1977, Tomkins, 1962, 1963, J. Singer, 1973). This study is one of the first to look at the patterning of emotions during the children's spontaneous play and to see whether these emotions relate in any systematic way either to the dimensions of Imaginativeness or also to the pattern of home television-viewing.

Imaginativeness of Play

In the present study there were two general methods for obtaining information about the imaginative capacities or manifestations in these three- and four-year olds. One approach involved direct interviews with the children about their earlier patterns of play behavior and also about whether or not they had imaginative companions. This approach also included the use of a set of inkblots that in the past have shown relationships to overt imaginative behavior in children. A third technique within this category involved questioning of the parents about the presence or abasence in their children of imaginary playmates, such fantasy play was viewed as an indication that the child at home is making responses either to thin air or to inanimate objects. The transformation of these objects by means of imagery into companions or sources of interaction at a playful level suggest a potential for other forms of spontaneous imaginative play. These methods sought to obtain evidence that the child at home, again under natural circumstances, was showing signs of developing inner life, capacity for pretending or for the use of imagery.

The second major approach to studying the imaginative dimension was to look at the ongoing play behavior of the children and score this behavior for evidence that the child was introducing pretend or make-believe components into the play, changing its own role or that of its companions, pretending to be in different places or time periods, etc.

The first Progress Report indicated that measures derived from direct inquiry, or the inkblots had yielded only modest to negligible evidence that such supports related to the spontaneous overt imagination of the children. There were indications that girls were more likely to report imaginative play at home than did boys, while in the overt behavior of the boys, there was clearly more indication of spontaneous imaginative play than for the girls.

Subsequent to the analyses of the first Progress Report, we have carried out more extensive work on the parent questionnaire data concerning the play patterns at home of the children as manifested in their use of imaginary playmates. This data along with the child's own report of imaginary playmates turns out to be among the most significant indicators of our study. A specific report on the results obtained with imaginary playmates which was reported at a professional meeting, is appended (Caldeira, Singer & Singer, 1978).

Imaginary Playmates and Overt Behavior of Language Development in the Pre-Schooler

In response to a questionnaire mailed to parents (see Appendix for sample questionnaire) it was possible to develop a number of measures concerning the nature and pattern of imaginary companions in our three- and four-year old children. Fifty-five percent of the parents reported that their children had imaginary companions. In response to direct inquiry of the children themselves, 65% had indicated that they had some form of imaginary playmate. This discrepancy is in the expected direction since presumably parents would not be privy to all of the possibilities of children having private fantasy companions.

Analyses of imaginary playmates were carried out in the sample separately by sexes. While girls tended to show a slight predominance of frequency of imaginary playmates over the boys, differences were more to be found not in the frequency alone, but in pattern of playmate. Thus, while boys almost invariably chose male imaginary playmates, girls were more likely to choose both male and female imaginary playmates. There are indications of considerable television influence in the list of such playmates. Girls were likely to choose male super-heroes such as Superman or Bionic Man along with their preference for female super-heroes such as Wonder Woman or Bionic Woman as imaginary playmates. Boys, however, almost exclusively limited themselves to the male fantasy characters. This finding of a movement by girls in the direction of both male and female activities, while the boys remain inflexibly "masculine" in their orientation even at such an early age, is consistent with many earlier findings on changes in choices of play things. Our results again indicate the relative inflexibility of the boys, perhaps a reflection of the persistence of "macho" or fears of "sissy" identification in boys as young as this.

Children without siblings, as might be expected, show significantly more imaginary playmates (Chi Square (1) = 7166, $p<.01$). The result is even more striking in the case of girls. In general, children whose parents reported them as having more imaginary playmates at home also showed more imaginativeness in their spontaneous play, more positive emotionality during this play and somewhat more cooperative behavior with adults in the nursery school setting. Children who had imaginary playmates at home were also much more likely to show more extended language usage during spontaneous play. They also turned out to be watching significantly less television. This result is one of the few indications we had of evidence supporting the more general hypothesis of this research which had proposed that a more developed imaginativeness in the pre-school child would lead to less resort to watching television.

This imaginary playmate variable is particularly important when we look at the multiple regression analyses for the behavioral variables. Again and again, the evidence from the child's home behavior that he or she is involved with imaginary playmates turns out to be one of the best predictors of the specific overt behavioral pattern observed in the children's play at the nursery school. For example, of a group of variables predicting whether or not boys will show spontaneous imagination in play, the indications of imaginary companion is one of the major predictors. This is also true in the case of the predictions of whether or not children will show positive emotions such as smiling and laughing during spontaneous play. (These data are based on cumulative scores over the years' time for the children. Thus, we are talking of a child's year long average of behavior in school as predicted by a report of spontaneous imaginative play provided by the parent at least six months to a year beforehand).

A similar result emerges for the degree of concentration shown by the child during play. Of only four variables that predict the occurrence of Aggression in overt behavior, two of these are imaginative predisposition measures in boys - the number of imaginary companions reported which is negatively associated with Overt Aggression and the number of human movement responses to the Barron Inkblots (presumably a measure, also, of imaginative predisposition) also negatively related to Aggression.

In other words, these data support (for the boys) findings already indicated with older children (Singer, 1973) concerning a potential inverse relationship between indices of private imaginativeness in children and the likelihood of overt aggression behavior. The number of imaginary companions reported turns out to be a strong predictor of the amount of social interaction a child will show and also the extent to which the child shows cooperativeness with adults. The Imaginary Companion variable also is negatively associated with the likelihood that the child will show sadness during play, indications of fatigue or sluggish behavior as well, and it is positively linked in the predictions of the child's liveliness and indications of elation.

Although the results are slightly different in the case of girls, essentially a similar pattern emerges. The number of imaginary companions at home links to Cooperativeness with Peers and with Adults and is negatively associated with the prediction of Overt Aggression behavior.

In summary, our data indicate that three- and four-year old children who, according to parental report, are playing with imaginary companions, turn out in their overt observable behavior during nursery school to be more imaginative on the whole, more inclined to be cooperative, to show more generally positive emotionality, and also are less likely to evince aggressive behavior or negative emotions such as sadness. They also seem more likely to be using more words and to be less likely to be extensive watchers of television. These findings do support the original hypothesis of this investigation.

Imaginativeness of Play in the Nursery School Setting

As indicated above, the likelihood that a child would be scored as showing imaginative play turned out to be one of the most consistent of behavioral variables. In other words, the child who by three or four years of age is showing spontaneous play that includes introduction of make-believe elements, is likely to continue to show such behavior over the years' time. Thus, a tendency towards make-believe as a part of a play pattern has already been established in quite a number of children by the third year of life. The tendency to play imaginatively is also closely linked with ratings by observers of more positive emotionality and indications of joy in the child. The correlation between Imaginative Play and Positive Affect over the years' time in boys is .666 and for girls it is .522. The correlation between Imaginativeness of Play and indications of persistence or Concentration are .393 for boys and .417 for girls. If we keep in mind that Concentration is one of the least reliable of our variables, this level of correlation is even more impressive. Children who reflect imaginativeness of play also turn out to be more likely to interact with peers and to share with peers. Correlations, again, are quite high and significant. The same pattern shows up for the emotional variables with Imaginativeness of Play negatively related to evidences of Fearfulness and Sadness or Fatigue and positively related to measures of Liveliness or Elation. Children who play more imaginatively are also more inclined to use more words, to make more direct utterances, and to show a higher Mean Length of Utterance. They are more likely to use more complex grammatical constructions such as Predicate Nominatives and to make more use of Future Verbs.

It might be argued that the correlation of Imaginative Play and Positive Emotion might simply be a function of the fact that children who speak a great deal will evoke more positive ratings from observers and also that the score of Imagination depends to some extent on the use of language. Thus, it could be argued that the relationship of Imagination to other variables may be part of a general verbal expressiveness. As it happens, when we correlate Imagination and Affect, partialing out the correlation between each of these variables and the number of words spoken, the correlation of .67 between Imagination and Affect drops only to .53, $(p < .001)$. Thus, the effect of eliminating the impact of the verbal productivity does not make a really major difference in the occurrence of a positive correlation between Imagination and Positive Affect.

Another issue that might be raised is the extent to which IQ may be a controlling variable and that imaginativeness and verbal expressiveness may be both reflections of the general intelligence of the child. The correlation between imaginativeness and number of words spoken during a ten minute play period averaged across the entire year for boys is .64. When the effect of IQ is partialed out, we still obtain a highly significant correlation of .63. In the case of girls, the correlation between Imaginativeness of Play and number of words used is .64 and with IQ partialed out, is still an impressive .59.

Of interest, also, is the fact that Imaginativeness of Play is also associated with somewhat more complex language usage such as the use of forms such as the predicate nominative, the beginning of metaphoric language use, and also the use of future verbs as parts of speech in the children's language. It might be argued again that in order to rate Imaginativeness of Play we must count to some extent on the occurrence of certain parts of speech to help us understand what the children are doing. The fact remains that in our data we find evidence that Imaginativeness of Play during one probe period can predict the likely occurrence of Future Verbs in the next probe period.

What seems more likely to be active here is not a simple cause-effect relationship, but a complex feedback process in which the child in the effort to express imaginative possibilities as part of a game draws on available knowledge of new forms and word structures. In so doing, he or she is further practising the use of these forms so that the ultimate propensity for vocabulary differentiation is heightened.

Figure 2 presents the results of a correlational analysis across the four probe periods of the study representing the relationships between observed imagination in the nursery school and the number of words children actually used during these ten minute play periods.

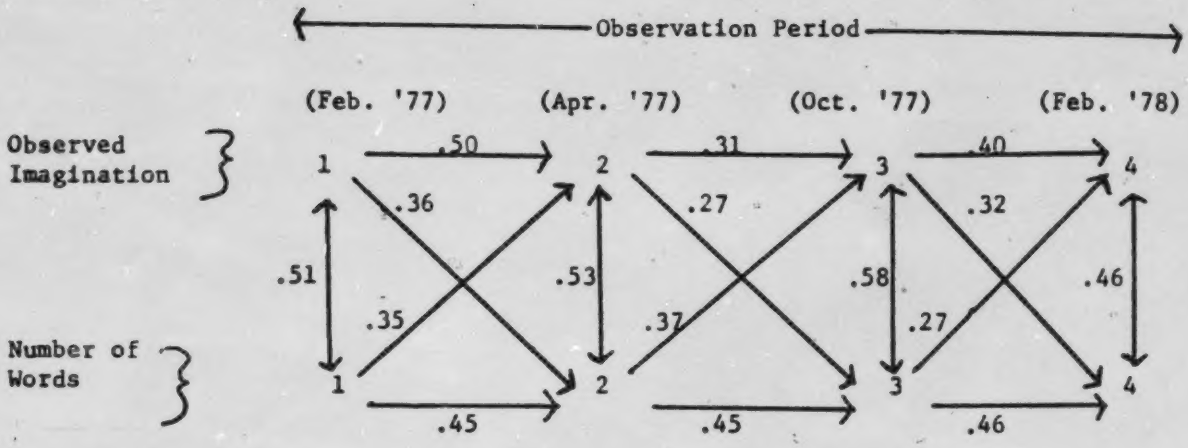

Observation Period
(Feb. '77)
(Apr. '77)
(Oct. '77)
(Feb. '78)
Observed Imagination
Number of Words
1
2
3
4
1
2
3
4
.50
.31
.40
.36
.27
.32
.51
.53
.58
.46
.35
.37
.27
.45
.45
.46

Figure 2. Diagram of Sequential, Simultaneous, and Cross-lage Correlations Across the Four Observation Periods for Observed Imagination and Number of Words Used in Play Speech.

The diagonals of this diagram indicate the correlation between observed Imagination at Probe 1 and Number of Words used at Probe 2 or the Number of Words used at Probe 1 and the score for Imaginativeness of Play at Probe 2. We would expect that if the number of words was invariably the "causal" factor, the diagonal from Words 1 to Imagination 2 should consistently be higher for all three comparison than the correlation from Imagination 1 to Words 2, etc. Actually, the data are mixed in this respect. The correlations of Words_1 and Words_2 with Imagination_2 and Imagination_3 tend to be higher but notappreciably so than the reverse correlation. For the fourth Probe, Imagination_3 correlates much higher with Words_4 than the reverse. These data would suggest the much more likely possibility that we are dealing with what Pervin (1977) would term a transactional effect.

Another hypotheses of this study initially was that children more likely to play imaginatively would also be less likely to be interested in television or to reflect some of the more noxious influences of that medium in their play. Data here are not especially interesting. In general, Imaginativeness of Play in the nursery shows relatively little relationship to the pattern or frequency of television-viewing. There is some relationship between degree of Concentration on TV shown by boys at home and their imaginativeness of play, but if anything, that relationship is reversed for girls. On the whole, we see little tie between the ongoing Imaginativeness of Play and Television-viewing frequency or the content of the shows watched. If we look a little closer at the predictions from a multiple regression analysis, we do find that children who watch the Commercial Television shows oriented to children or who watch the Adult Family non-violent drama are more likely to be imaginative while those watching the more "hyped-up" Variety or Game shows are less likely to be imaginative. The imaginative children are, however, also more likely to be Cartoon watchers. In the case of girls, there is contribution to the multiple regression prediction of Imaginativeness of Play made by watching of situation-comedy and a negative relationship is found between Weekend Television-Watching and Imaginativeness of Play. In general, therefore, the best we can say is that children who play imaginatively are somewhat more likely to be watching what might be termed the more "benign" programming, family dramas like The Waltons, situation comedies like Happy Days or I Love Lucy or The Odd Couple, commercial TV children's shows as Captain Kangaroo and do not appear to be especially watchers of the more active "hyped-up" shows such as The Gong Show or the violent detective shows. These results are, however, not tremendously impressive by any means, and the hypothesized inverse link between imaginativeness, television-viewing patterns and aggression cannot really be supported from our data based on ongoing play.

The Playfulness Dimension: A Factor Analytic Result

Factor Analyses were carried out (separately by sexes) for each probe period to ascertain particular major dimensions which could describe the basic data of this study, the predispositional variables such as Age, IQ, SES, Ethnicity, Imaginative Predisposition measures, the Observed behavioral variables, the patterns of Language Usage and the Television Frequency, Intensity and Program Content pattern. An important caution in factor analyses of this kind is the fact that since data have been collected by very different means, e.g. parent questionnaires for imaginative companion data, direct testing of the child for IQ or inkblot responses, observation of the child during play for Imaginativeness or Positive Affective, etc. and recording by parents over a two week period of time four different times during the year of daily TV-viewing by the child, we run the risk that the method of data collection may be a major determinant of how variables cluster together. As can be seen, however, from the factors in Table 5 the occurrence of instrumental determinants does not eliminate meaningful clustering on the same factor of variables in which data has been collected by quite different methods. Thus, while one of the three factors which emerges is clearly a language factor, specific categories of language also load with the behavioral variables and similarly specific behavioral variables load on the factor which is dominated by the television variables.

The factor analysis presented here is a three factor solution which for girls accounts for approximately 37% of the variance in the sample, while for the boys it accounts for almost 39% of the variance. The three major factors are relatively easily labeled. The first with its highest loadings for Interaction with Peers, Positive Affect, Imaginativeness of Play and Liveliness and Elation as well as with high loadings for Number of Words Employed and Number of Utterances by the child clearly represents a general expressive Playfulness factor. It is very much like that obtained in earlier research by Lieberman (1977) using quite different measures. It is almost identical with the factor reported with a group of middle-class South African white children by Shmukler (1977) employing the same behavioral ratings and observational procedures employed in the present study.

A second factor with which we will deal in greater detail below, contains its highest loadings on Frequency of Television variables, and, of course, for the types of television shows watched. It also has sizable loadings on Overt Aggressive behavior and on the emotions of Anger as well as certain language variables.

A third factor is more clearly a Language instrumental factor except that it does not show quite the high loadings for some of the more advanced language variables that also show up on Factor 1.

Examining Factor 1, we see a very clear indication that a high scorer on variables of this factor both for boys and for girls would be characterized as a kind of happy child who is likely to be playing a make-believe game, is probably smiling or laughing, shows intense interest, cooperates in play with other children and rarely shows signs of fear, fatigue or sadness. In the case of boys, there are also some indications of an association between these behavioral indices and the evidence from interviews with child or parent of imagination as measured by the imaginary companion questionnaire, the imagination interview with the child, and the Barron Inkblot scores. It is also noteworthy that the intensity with which the child stays with the program once it starts to watch it, also loads sizably on this factor for boys. The factor seems to be picking up a pattern of consistency both at home and in the play situation of imaginativeness and of a generally positive orientation. Age loads on this factor suggesting that we see this patterning more strikingly amongst older children. IQ also loads modestly on it. For girls, the carryover of imagination from the home situation to spontaneous play in the school setting is not in evidence on this factor, and it may well be that girls because of their demonstrably higher verbal capacity may have moved more rapidly towards the internalization of some of their imaginative skills and are less likely to represent this directly in spontaneous play or in overt verbalization.

This Playfulness factor appears in the factor analyses of each of the 4 probes as well as in the summary factor analyses presented here seems to call for more intensive exploration and future studies of children. We seem to be finding evidence of a pattern of a kind of "happy playful" child that is already clearly in evidence by the ages of three and four and that includes a strong component of imagery and fantasy as well as strong element of sharing and helpfulness or other prosocial behaviors.

Some might argue that this factor might represent some type of "halo" effect in the way observers react to the children. This position seems hard to support because the definition of the variables clearly separate out in their presentation the possibility that children can be playing imaginatively all alone using some toy cars or blocks, using onomatopeia and other indications of fantasy, and yet not be interacting particularly with peers or showing much in the way of actual positive emotionality other than perhaps the concentration over a period of time. The results rather appear to suggest that we are dealing with the genuine clustering of intrinsic variables that have already evolved and have become relatively crystallized by the third year of life. Of interest, also, are the particular patterns of language associated with this kind of play - not only the sheer productivity of verbalization, but also the use of Predicate Nominatives or Future Verbs. In the case of the girls, we see, also, a negative loading for number of pronouns - uses such as "I want this" or "That's mine" which might be linked to more primitive self-oriented patterns of communication.

In general, the results of the factor analyses strongly support a major initial hypothesis of the study. It had been argued that imaginativeness of play in children would be associated with more constructive and enjoyable behavior. The finding here replicates previous work which dealt with a more limited range of variables and limited samples, based on data drawn from only a single cross-sectional view of children's behavior. Here we are, after all, dealing with the cumulative results of a year's observation of these children. Also keep in mind that an intervention study has been underway during this period and it was intended to modify imaginative play patterns. Clearly, if it did, it has not changed the overall factor structure. The similarity of these data to, not only earlier findings by the principal investigators (J. Singer & D. Singer, 1976, Tower, Singer, Singer & Biggs, 1977), but to quite independent research using similar instruments by Shmukler (1977) and to a study with kindergarten children using very different instruments by Lieberman (1977), suggests that we are dealing with a major dimension of early childhood experience and behavior. Future research might want to look at children who obtained particularly high or particularly low factor scores on this Happy, Imaginative Playfulness dimension to see if we can pin down more precisely earlier childhood origins of such an orientation, and also to look ahead towards later implications of this pattern in the school years. Chapters by Singer (1978) and Tower and Singer (1978) have explored some of the broader theoretical and research implications of the association between positive affective experience and imaginativeness in the spontaneous play of pre-schoolers.

Television-Viewing and Aggression

A major finding which emerged in the first Progress Report was the consistent association between aggressive behavior and the frequency and patterning of the children's television-viewing. With the data now accumulated over a full year, the indications are that this finding was, indeed, a robust one. Inspection of Factor 2 of the factor analysis, yields a clear factor with highest loadings for Weekday and Weekend and Weekly Television, the other television variables such as Situation-Comedies, Variety and Game shows and Action-Detective (violent) shows also loading high. What is especially striking is the extremely high loading of Aggression (.603) on this factor. Also loading of course are at least for the girls, a moderately negative association with IQ and a positive relationship to socioeconomic status. Language variables that load on this factor include the use of Onomatopeia and the use of Imperative Sentences. For boys, we see on this factor the same high loading for Aggression (.553), a negative loading for Cooperation with Adults (-.334), a positive loading for Anger (.525), as well as indications of positive loadings for SES (indicating that lower SES classes are more likely to show both the high TV-viewing and aggression) and a score of ethnicity (indicating that Hispanic or Black subjects are more likely to show high TV-viewing and overt aggression in this sample).

These data seem extremely important. They represent essentially the first data we have for children as young as three and four who have been followed over a period of time and who show the link between frequency of television-viewing and actual overt aggressive behavior in the course of nursery school activities. The findings reported in the Surgeon General Committee's report were based essentially on responses of children to relatively short exposures to television and no sampling over extended time was employed. In the present study, we have, in effect, watched these children over a year's time.

Another way of looking at some of the major linkages between television-viewing and aggression in our sample is to divide the males into those who are High and Low in Aggression, and then to examine the pattern of differences on behavioral variables and other variables of the study. Similarly, we can divide the subjects from their means into those who are High and Low in Weekly Television-viewing and look at the way the other variables fall out. Table 6 indicates that for males those High in Aggression also show significantly less ability to Concentrate during play, less Cooperation with their Peers during play, more evidence of the emotions of Fear or Anger and Sadness during play. With respect to parents' ratings of their home viewing patterns, these same children also show significantly more watching of Weekday Television, Weekly Television and they also reveal less persistence (Intensity) in how they watch television than do their less aggressive peers.

Of the types of shows watched, these groups differ significantly only in three categories, the watching of Cartoons, watching of Situation-Comedies and the watching of Action-Detective or more violent shows. There are also, it should be noted, intelligence differences between the two groups with the more aggressive children yielding significantly lower IQs on the average than the less aggressive children, although in both cases, the IQs are well above average. There is also a trend for the more aggressive boys to show significantly fewer Rorschach Human Movement responses to the inkblot tests, a result that for these three-and four-year olds is surprisingly comparable to a large number of studies with older children and adults that indicate the inverse relationship between aggression and production of these Human Movement to inkblots (Singer & Brown, 1977).

For girls, who in general showed far less aggression than did the boys, we find a similar pattern of differences between the High and Low Aggressives. The High Aggressives show significantly more Anger than the Low Aggressives. They also are watching more TV during the Weekdays as well as Weekends and, of course, more total Weekly television than the Low Aggressive girls. With respect to type of programming watched, the High Aggressive girls are especially watching more Cartoons, more Situation-Comedies, more of the Variety and Game shows with their hyperactive activity, in general more of the Action-Detective shows. Almost every category reflects the difference between these groups. Again, we find that the more aggressive girls come from lower socioeconomic status groups within our sample.

If we next look at the differences between those subjects who are High Television-viewers versus those who are Low television-viewers we find, for the boys, that the High-viewers are somewhat more likely to show more imaginative play, are highly significantly more Aggressive, significantly more Angry or Annoyed. With respect to TV-viewing, High TV-viewing goes along as might be expected with all of the various categories. The IQ difference is present again with the Low-viewers being significantly brighter than the High-viewers, although again both groups fall into a well above-average category. Again, the socioeconomic class difference emerges and also interestingly, we find evidence that those children who report Low Television-viewing are also more likely to report a number of imaginary companions. For girls, Low Television-viewers are significantly less Aggressive than High viewers, and they are also likely to be somewhat older and of a higher socioeconomic status. So far, the results, while clearly indicating a connection between TV-viewing and aggression, might well also simply be reflecting the fact that children from lower socioeconomic status are also more likely, on the one hand, to be allowed to watch a good deal of television of all kinds, and also are more likely to be exposed to and model violence from families, siblings or peers. Are there ways of pinning down the relationship of aggression more directly to the television-viewing patterns?

If one looks at the factor analysis, it is clear that socioeconomic status and to a lesser extent, ethnicity, may be implicated in the factor linking aggression and TV-viewing. The cultural background variables seem to show lower general loading than do the linkage of television and overt aggression to each other.

We can approach this question even more effectively by looking at what combinations of variables best predict the likelihood that a child will show Overt Aggressive behavior during play. In earlier probes, the data consistently indicated that the best predictors of Overt Aggression were likely to be the television frequency variables or the watching of specific program categories such as the violent or Action-Detective shows. We will now look at the data accumulated across the four probe periods over the year.

For boys, it is possible to generate only four variables that accumulate to yield a multiple correlation of .595, significant at $p < .001$ and accounting for 35% of the variance in the grouping of variables employed. Of these four, the first and strongest is the viewing of Action-Detective shows. This is followed by the watching of News broadcasts, and we then also get negative relationships for imaginary companions and the Barron Inkblot responses, as suggested already. Thus, despite the possibility that variables like Age and IQ might be important, it turns out that the best predictors of Overt Aggression are specific types of programming and especially the more violent action detective shows.

If we look at the likelihood that the child will show a good deal of Anger during spontaneous play, we also find that the only two variables contributing significantly to the multiple correlation of .58, account for .339% of the variance, ($p < .001$) are watching of News and Action shows.

For girls, the initial results are a little less clearcut for this analysis with the heavy watching of Situation-Comedies, Sports and Cartoons being particularly linked to Overt Aggression with a negative linkage for the watching of the less violent Adult /Family dramas like The Waltons. Again, the Imaginary Companion index is negatively related to Overt Aggression. For girls, again we see the Action-Detective shows and Cartoons negatively linked to ratings of Positive Affect during play, while the watching of shows like Sesame Street and Mr. Rogers are positive predictors of enjoyment during play.

Of the analyses that were carried out for prosocial behavior, such as Cooperation with Adults, we find for boys that the watching of Sports or News broadcasts are negatively linked as predictors of Cooperation and the watching of the Educational TV shows like Mr. Rogers or Sesame Street are more positively linked. Again, the Imaginary Companion variables come into play here. For girls, in general, the trend is similar although not as clearcut. For example, in Interaction with Adults, watching the Educational television shows or less Weekly TV turn out to be the better predictors of Adult Interaction. For Peer Cooperation, we see negative predictions for Action shows and Sports watching among other TV variables. Increasing our N by including boys and girls, we find that Weekend TV watching and the watching of Action television shows are amongst the best predictors of Aggression.

It might still be argued that despite these findings, the linkage of aggression and television-viewing may simply reflect a general social class factor since, much survey research points out that persons of lower socioeconomic status tend to be far more frequent viewers and watch somewhat more of the Action-Detective shows and also are somewhat more likely to be Overtly Aggressive in their behavior. Most of those data, of course, come from older age samples. For our three-year and four-year old boys, the overall correlation between watching Action-Detective shows and the occurrence of Overt Aggressive behavior is .43. If we partial out the correlation between each of these variables and Socioeconomic Status, we are left with a significant positive correlation of .38 between Overt Aggression and the watching of Action shows.

If we look at the relationship between Aggression and Weekly Television-viewing, the correlation is .32. If we partial out the correlation of each of these variables with SES, we are still left with a significant partial correlation of .31. Thus, it seems unlikely that SES can be viewed as a primary determining factor in the association we are obtaining.

For girls, the results are somewhat less clearcut, although much in the same direction. The correlation between Aggression and Action-Detective shows is .34. With the correlation between SES and each of these variables partialed out, we are left still with a significant correlation of .26 between these variables. For the association between Aggression and general Weekly Television-viewing, the correlation is .47. Partialing out SES, we still obtain a significant $\underline{r}$ of .38.

Still another way of approaching the question of causality is through the use of sequences of correlations. It could be argued that children who have already developed aggressive tendencies simply are more likely, concommitantly, to develop a diet for more frequent TV-viewing and even more specifically, for the watching of the Action-Detective or violent shows. This argument is somewhat less convincing since we are talking of three- and four-year old children. They are not as likely as older children to have a direct say in what programming they will watch. Action-Detective shows come on presumably after their normal bedtime. Therefore, it seems much more likely that parental indulgence permitting the children to watch the action shows may be critical here, and this might lead to the further development of aggressive tendencies. Figures 3 and 4 represent diagrams indicating the patterning of correlations across different time periods indicated as one and two or one, two, three and four for combinations of variables such as Aggression and Weekly TV or Aggression and Action shows and presented separately for the boys and girls.

If Aggression is influenced by Weekly TV-viewing or by the watching of Action shows, then one should expect a higher correlation along the diagonal linking the Action shows at Time 1 to the occurrence of aggression at Time 2, than along the diagonal linking Aggression at Time 1 to the viewing of Action shows at Time 2. The correlations along these diagonals are close together in magnitude. We can either assume that there is no clear causal possibility or it remains possible that we are, indeed, dealing with a more complex feedback circuit, and this might become manifest if we follow the pattern over several different probe periods. If we look at the diagram for the first two probes, February and April of 1977, the watching of

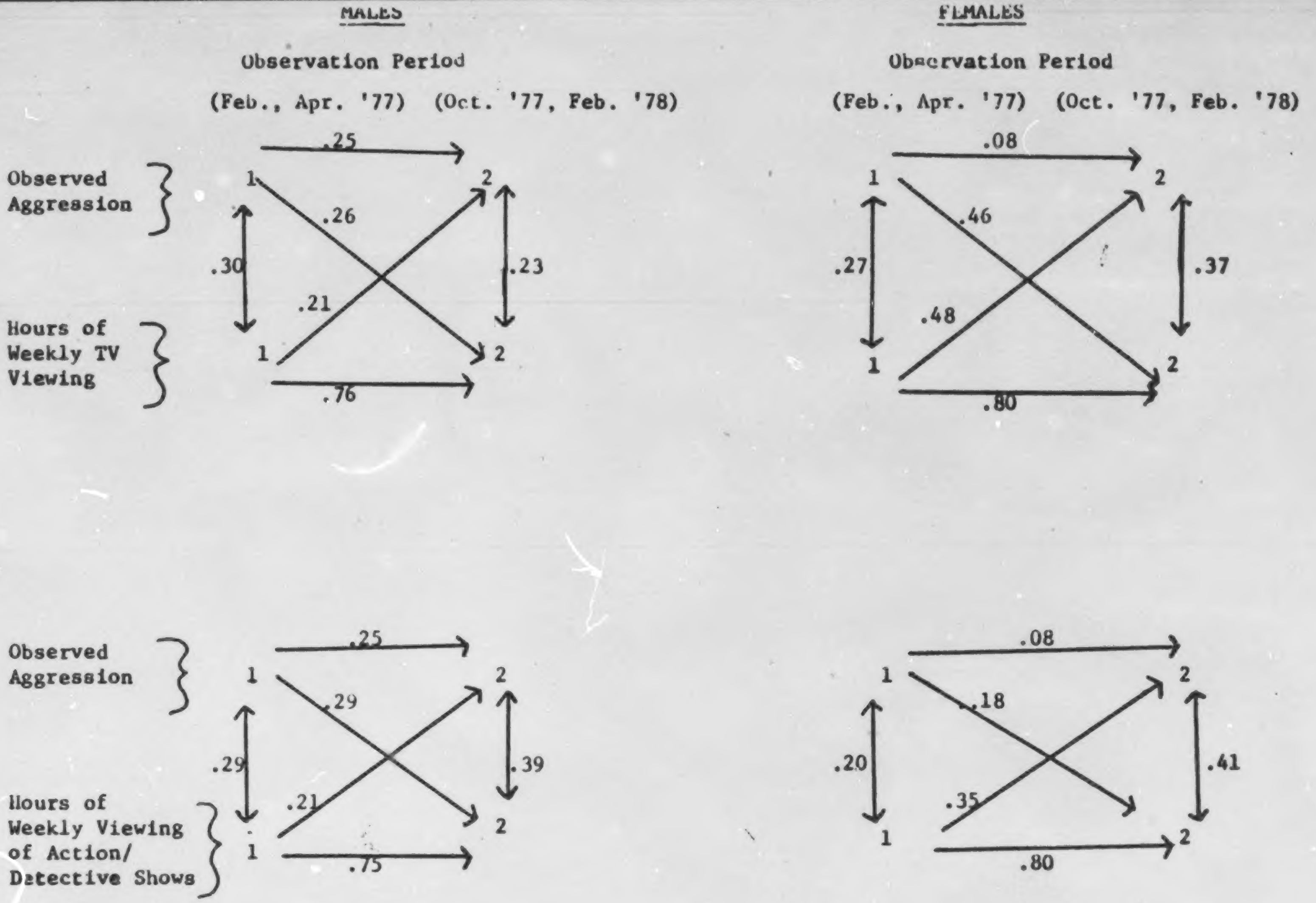
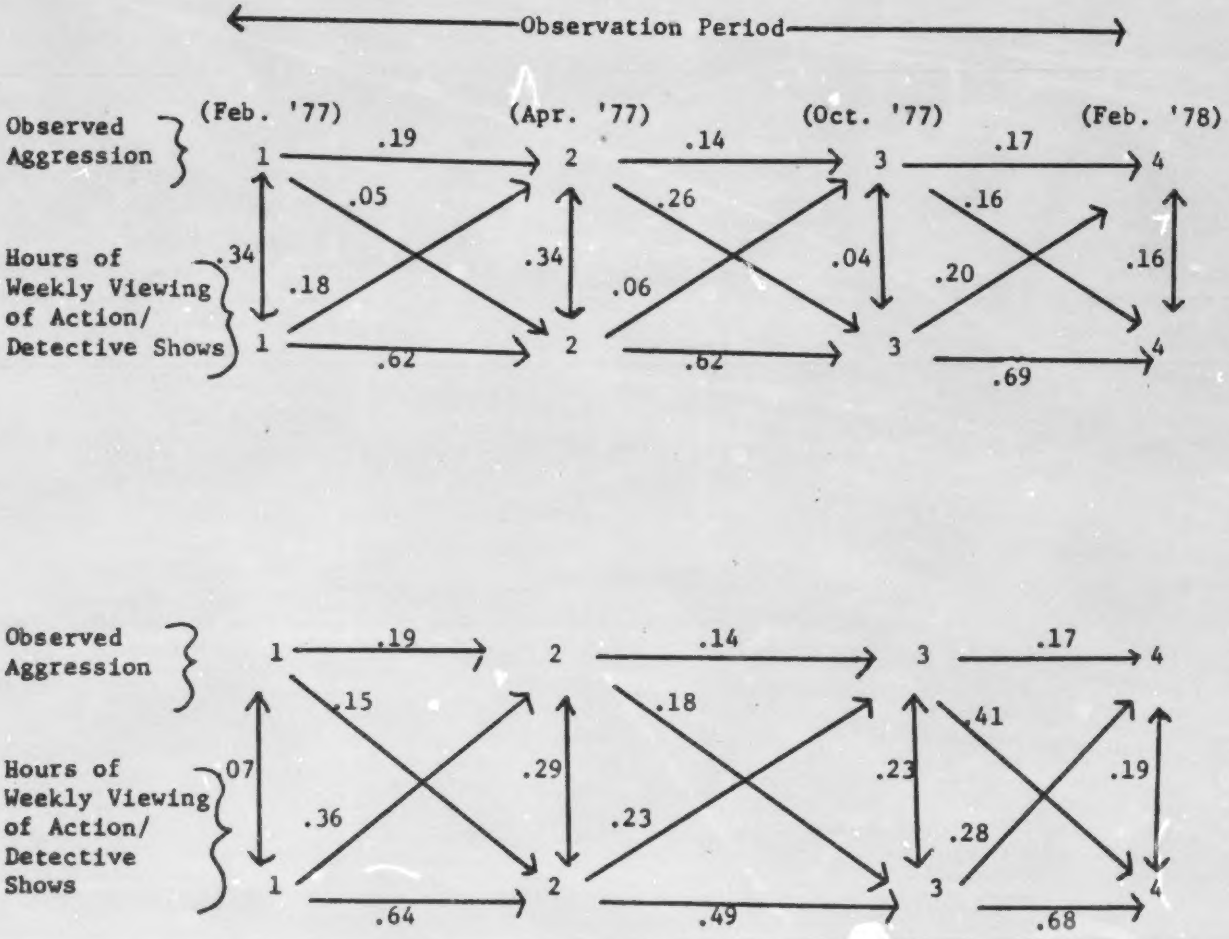

MALES
FEMALES
Observation Period
Observation Period
(Feb., Apr. '77)
(Oct. '77, Feb. '78)
(Feb., Apr. '77)
(Oct. '77, Feb. '78)
Observed Aggression
Hours of Weekly TV Viewing
1
2
1
2
.25
.26
.30
.23
.21
.76
1
2
1
2
.08
.46
.27
.37
.48
.80
Observed Aggression
Hours of Weekly Viewing of Action/ Detective Shows
1
2
1
2
.25
.29
.29
.39
.21
.75
1
2
1
2
.08
.18
.20
.41
.35
.80

Figure 3. Diagram of Sequential, Simultaneous, and Cross-lag Correlations Across Probes (Feb. and Apr. '77 versus Oct. '77 and Feb. '78) by Sex for Observed Aggression, Total Hours of Weekly TV Viewing, and Hours of Weekly TV Viewing for Action/Detective Shows.

MALES



Observation Period
(Feb. '77)
(Apr. '77)
(Oct. '77)
(Feb. '78)
Observed Aggression
Hours of Weekly Viewing of Action/Detective Shows
1
2
3
4
.19
.14
.17
.05
.26
.16
.34
.34
.04
.16
.18
.06
.20
.62
.62
.69
Observed Aggression
Hours of Weekly Viewing of Action/Detective Shows
1
2
3
4
.19
.14
.17
.15
.18
.41
.07
.29
.23
.19
.36
.23
.28
.64
.49
.68

Figure 4. Diagram of Sequential, Simultaneous, and Cross-lag Correlations Across the Four Observation Periods for Observed Aggression, Total Hours of Weekly TV Viewing, and Hours of Weekly TV Viewing for Action/Detective Shows.

FEMALES

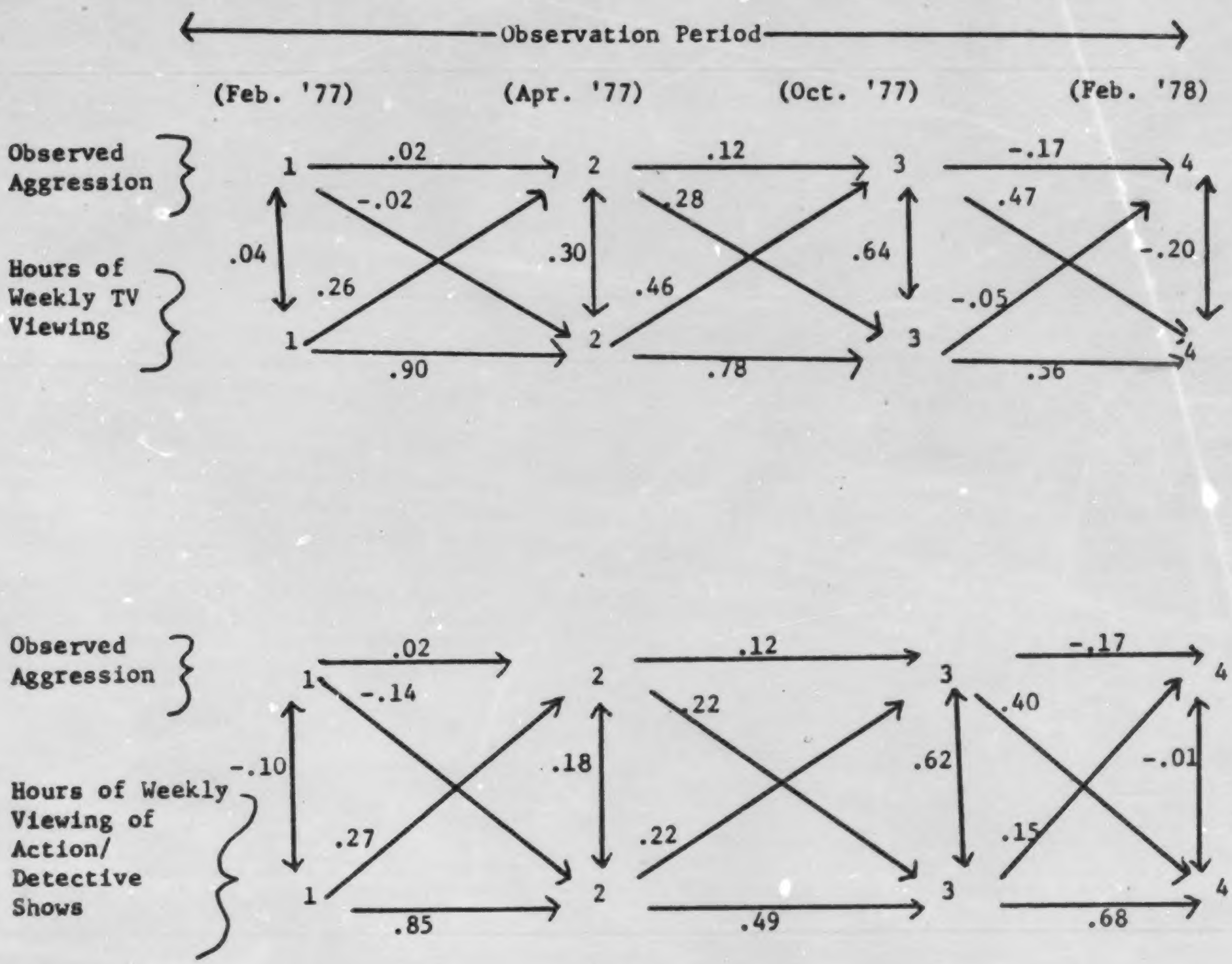
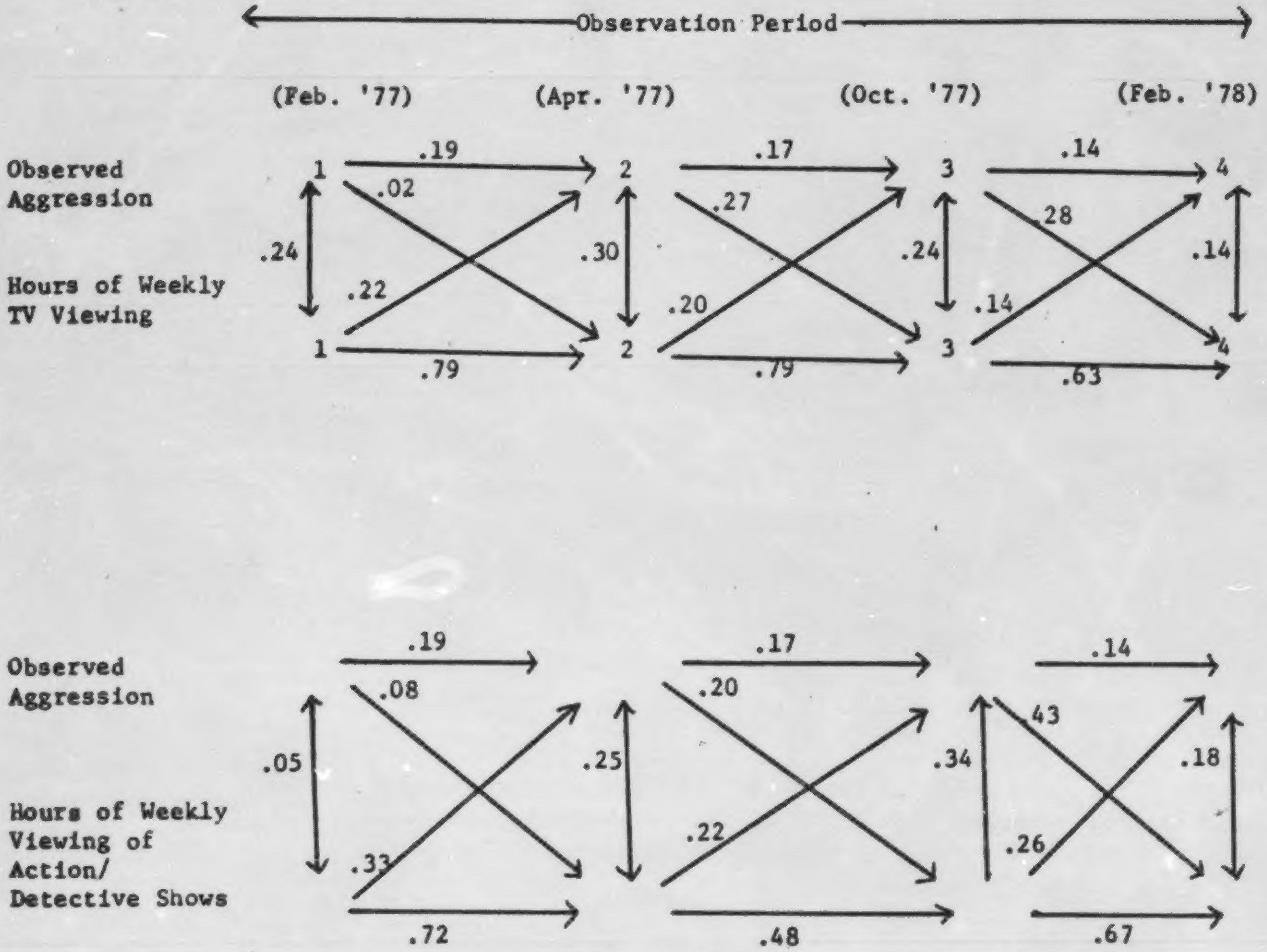

Observation Period
(Feb. '77)
(Apr. '77)
(Oct. '77)
(Feb. '78)
Observed Aggression
Hours of Weekly TV Viewing
1
2
3
4
.02
.12
-.17
-.02
.28
.47
.04
.30
.64
-.20
.26
.46
-.05
.90
.78
.36
Observed Aggression
Hours of Weekly Viewing of Action/ Detective Shows
.02
.12
-.17
-.14
.22
.40
-.10
.18
.62
-.01
.27
.22
.15
.85
.49
.68

Figure 4. Continued.

TOTAL SAMPLE



Observation Period
(Feb. '77)
(Apr. '77)
(Oct. '77)
(Feb. '78)
Observed Aggression
Hours of Weekly TV Viewing
1
2
3
4
1
2
3
4
.19
.17
.14
.02
.27
28
.24
.30
.24
.14
.22
.20
.14
.79
.79
.63
Observed Aggression
Hours of Weekly Viewing of Action/ Detective Shows
.19
.17
.14
.08
.20
43
.05
.25
.34
.18
.33
.22
.26
.72
.48
.67

Figure 4. Continued

data of correlations clearly suggest that the correlation for both boys and girls from weekly television leading to aggression in the second probe period is consistently higher for each of the comparisons across boys and girls than the correlation between the initial evidence of Aggression and later indication of either Weekly viewing or watching of Action shows. This pattern does not hold up so strongly in the period between the second and third or third and fourth probes. For boys, there is a comparable trend for the correlation between Action shows at Probe 2 and 3 to be higher than the correlation between Aggression and Action shows at Probe 2 and 3, but this reverses by the time of the fourth Probe. For girls, the relationship of Weekly TV as a predictor of Aggression from the second to the third probe, again, is stronger than the correlation between Aggression in the second probe and the likelihood of watching a good deal of TV in the third probe. This result does not hold up well in the shift from the third to the fourth probe.

In general, inspection of this figure tends to suggest that at least at the beginning of our study, those children who were already watching a good deal of television or a good deal of the violent shows would be more likely within a few months to become more aggressive. The findings over a longer period of time are less conclusive in suggesting this causal direction. The same general trend emerges if we combine all subjects and look across the four probes. If we combine Probes 1 and 2 and attempt to see how well these patterns predict for Probes 3 and 4, thus in effect, dividing our four probe periods into two halves, results for the boys indicate relatively little difference in the correlations at the diagonals. For girls, with respect to Aggression and Weekly TV, a similar result is obtained. The association of Action shows and Overt Aggression, however, does suggest a possible causal link with the Action shows yielding almost twice as large a correlation with Aggression in the second half of the year then the correlation between Aggression in the first half of the year and the watching of Action shows in the second half of the year.

On the whole, the data from these somewhat primitive path analyses is in a modest way supportive of a possibility that the watching of the more violent television shows is linked in three- and four-year olds to subsequent aggressive behavior. Levels of correlation and the patterning are not too dissimilar from those reported in their review of the general area by Lefkowitz, Eron, Walder & Huesmann (1977). It also seems even more clear from these data that the argument that children who are initially aggressive are more likely to watch a good deal of aggressive TV is largely ruled out by the pattern of correlation.

In effect, then, our examination of the linkage we find between aggressive behavior and frequency or type of television watched seems to fall within the general group of results that suggest that some aspect of the viewing situation, its content or arousal value, may be influential in fostering aggressive behavior even in children as young as three or four years of age. Within our data, IQ, socioeconomic status and ethnicity as well as the possibility that aggression leads to a particular appetite for watching violence seem to be *less* influential factors than the *sheer amount of time spent watching TV* and *particularly Action-Detective shows*.

Family Interview Study
Home-Life Style, TV-Viewing and Aggression

Is it possible that certain characteristics of the family may lead on the one hand, to the encouragement of aggressive behavior in the child (perhaps through imitation of parental aggressiveness) and at the same time to the encouragement of the child's watching aggressive material on television? In order to examine this question further, we have carried out a series of intensive home interviews with the mothers of children who have been identified over the year's time as representing extremes in both their amounts of television viewing and in the degree of aggressive behavior manifested in the nursery school setting. If indeed, there are fairly clear stylistic differences between families which may both foster aggression and excessive TV-viewing, then these should become apparent once we get into the home and have an opportunity to explore in greater detail the daily routines of the family, the interaction of father and mother in household routine, the patterns of punishment employed in the family, the possible occurrences of life-stress situations in the home, etc.

Forty children were identified whose observational ratings over the 4 probe periods consistently reflected either extreme aggression for our sample or a minimum of aggression and who also differed as extremes in the total weekly television-viewing based on the 4 probe period logs. To meet our criterion, a child must have been above the group median for aggression in at least 3 of the 4 probe periods.

Wherever possible we chose those children who were consistently above the group median for all probe periods and also above or below the median in TV-viewing for the 4 periods. Thus, we emerged finally with 4 groups of 10 children, 6 boys and 4 girls in each group, who represented the following categories:

1) Low aggression-low TV-viewing
2) Low aggression-high TV-viewing
3) High aggression-low TV-viewing
4) High aggression-high TV-viewing

Table 8 presents the means for TV-viewing separated by sexes and then cumulated for groups for the TV-viewing and aggression behavior ratings of the subjects in the sample. Inspection of this table indicates that on the whole the groups are well-balanced and representative of their categories. The high aggressive-high TV-viewing group is perhaps somewhat more aggressive in scores than the low TV-viewing-high aggressive group, but this should be expected in view of the consistently positive correlation between TV-viewing and aggression in our sample. Nevertheless, the differences on the TV-viewing dimension between these groups are quite extensive with the high TV-viewers averaging on the whole, more than 50 hours a week of watching while the low viewers record less than 2 hours a day over the week's time.

The interview procedure was based on a detailed schedule of questions which were presented by the interviewer to the mother at the home in a semi-structured interview format. Following the narrative report of the mother, the interviewers indicated appropriate answers within the schedule and also where feasible, rated characteristics such as the relative disorderliness-organization of the household, the presence or absence of books, musical instruments, guns or weapons, etc. A further rating schedule was prepared and ratings carried out by staff who had not necessarily themselves carried out the specific interviews but who drew on the narrative accounts of the materials presented. Interviewers were not familiar, on the whole, with the category from which the children were drawn. A copy of the interview schedule is appended.

In addition to the interview, a Television Character Recognition Test was also administered to the child in the home. This test consists of a series of 4 pictures of persons or cartoon figures drawn from current television fare each presented on a page. The child was asked to pick out who on the page was "The Fonz" or "Kojak". The format was much like that of the Peabody Picture Vocabulary Test. The test was run through once forwards with one answer per page and then repeated with a new character asked for from each page.

The purpose of this test was to ascertain the extent to which parental report through logs of TV-viewing frequency in the children were also reflected by the children's awareness of characters from television. It was anticipated also that even low TV-viewers would show a wider range of character recognition because of broader cultural peer influences, the availability of picture cards of TV characters, the sale of toys based on TV characters, etc. The characters showed also lent themselves to separation into the same categories as were used in the analysis of the TV-viewing patterns of the children. Thus we can ascertain the extent to which children are more prone to recognize certain types of characters, e.g. cartoon figures or educational TV figures, than others might be.

Results

Analysis of variance were carried out for the various categories employed in the questioning of the parents. By looking at the patterning of the means across the 4 categories and at the systematic trends, it is possible to develop, at least to some extent, a picture of the special characteristics of the family of children who fall into each of the 4 groups. If an inherently aggressive family style is the critical factor in influencing the likelihood that a child will be aggressive in the nursery school setting, then we should find that aggressive children, irrespective of amount of TV-viewing they show, should be coming from families in which there is considerable evidence of intrafamily fighting, perhaps physical punishment, evidence of stress, disorganization or the other signs reported in earlier literature as associated with the occurrence of violence in children. Of course, one must keep in mind that the children in this sample are not by any reasonable definition, antisocial nor pathologically aggressive and that, indeed, their level of aggression relative to the total possible range of scores is modest even if decidedly higher than that of the low aggressive children. If family styles of aggressive behavior are not critical determinants of the child's aggression in nursery school, then we should see more clearly indications of greater TV-viewing tolerance in the families of high aggressive-high TV-viewing children.

In general, the statistical analyses of the study suggest if anything, greater commonalities across the 4 types of families than differences. We do not find evidence of gross differences in the degree to which there are signs of disorganized or broken families in our groups, nor are there differences in general, in types of punishment, in evidence of family fighting or other indices of stimulants for aggressive behavior that vary systematically across our groups. The pattern of systematic difference that does emerge is focused chiefly on the High Aggressive-High TV-viewing families which are chiefly characterized by a considerable laxity in control of the television set on the part of the parent and in a general family lack of varied outside interests. The following family characteristics seem to identify the High Aggression-High TV children: (where significant F-ratios have emerged across the 4 groups these will be indicated by p-values in parentheses).

The family and home setting of the child who is characterized as high aggressive-high TV-viewing shows the following pattern:

It is somewhat more disorganized than the other families, it has less toys in evidence around the home than the other families, it shows by far the least evidence of books ($p < .0007$), there is less evidence of musical instruments or records ($p < .05$), children are allowed to stay up later at night and wake up later in the morning than other children, and, indeed, their fathers are more likely to wake up later in the morning both on weekdays and weekends ($p < .03$, $p < .07$) than the fathers in the other groups. Mothers wake up time tend to be earlier for this group than for the other. In general, the High Aggressive-High TV-viewing family seems to reflect a somewhat more conventional male-female relationship with the father showing relatively less interest in home-making activities than the fathers in the other groups. ($p < .02$).

Especially striking for the High Television-High Aggressive child is a kind of looseness of control around the whole television-viewing situation. The family is likely to watch television while they are eating. As might be expected from the TV logs, the mothers reports indicate that both High Television-viewing group children spend more time watching television both in the morning and at night. The children in the High Aggressive- igh TV group are allowed to stay up latest ($p < .04$) are less likely to have a regular bedtime routine ($p = .07$), are less likely to have stories told to them at bedtime ($p = .02$), are less likely to have a calming down period before going to bed ($p = .09$), but are more likely to engage in bedtime prayer ($p < .008$). The High Aggressive- igh TV child is more likely than the other children to be watching television with his or her mother ($p = .02$). Striking is the fact that the child from this group is much more likely to be reported by the parent as controlling the TV set ($p = .007$). In keeping with the general pattern of less varied interests in this family, there is a trend for children in this group to be more likely spending time with parents going shopping but less likely to be taken to parks or picnics or to museums. Children from this group are, however, more likely to go to the movies with their parents. In respect to family sports interests, the father and child generally show greater orientation towards team sports that involve contact or aggression (although these results are not statistically significant). With respect to joint television-viewing patterns of parents and children in these groups, as might be expected, both low and high aggressive high TV groups show the most viewing. there are interesting differences that emerge. The high aggressive-high TV-viewers are much less likely to be watching educational television children's shows than are for example, the high aggressive children who watch very little TV. They are watching more Situation-Comedies with their families ($p=.03$), and also more Variety and Game Shows than the other groups except the low aggression-high TV-viewers ($p=.06$). Both of the aggressive groups, high and low TV-viewers alike, are less likely to be watching the Adult-Family shows such as "The Waltons" than are the other two groups. Similarly, and much more strikingly, the high aggressive-low TV watchers as well as the high aggressive-high TV watchers are both more likely to be watching the Action-Detective shows. Indeed, if one looks at the means across the 4 groups, the average viewing of Action-Detective shows by both high aggressive groups is more than 4 times as great as the viewing of those shows by both low aggressive groups! It appears that even for those children who are relatively light viewers of television in our sample, but who at the same time, manifest a high level of aggression in their play, they turn out to be somewhat more likely to be watching the Action-Detective shows relative to the other types of shows available. In keeping with the general, somewhat conventional, masculine patterns of the family style of the high aggressive-high TV child, the father is especially likely to be watching Sports on television ($p<.002$), and least likely of the various groups to be watching the News ($p=.12$).

As might be expected, there is greater evidence of argument between children in the family for the both high aggressive groups with the high aggressive-high TV group showing clearly the largest score in this regard. The relative emphasis on physical vs. verbal fighting is greater for the high aggressive groups with the, again, high aggressive-high TV groups showing the highest scores in this respect as well ($p<.01$). It seems very likely that the aggressive behavior observed in the nursery school is also clearly in evidence in the home situation. Indeed, again, this is one of the first studies that has been able to show continuity of behavior in such very different settings.

While there are indications that the children in the aggressive groups are more likely to be spanked by father and by mother ($p=.08$) and also are less likely to be rewarded by praise ($p=.01$), there are in general few other indications of gross family style differences with respect to physical activity, family fighting or other possibilities of modeling that could differentially influence the children. Rather, we find indications that the high aggressive-high TV children are distinctly above the other groups in their general activity level and also especially in the likelihood that their mother will describe them as having a "fighting problem" ($p=.001$). These children are clearly the least shy of the groups while the low aggressive-low TV-viewers are the most likely to be shy ($p=.06$). The high aggressive children are reported by their mothers as less likely to show humor in their day to day pattern of behavior, a result that seems generally in accord with our findings of the association of positive affect and imaginativeness of play with no relation to overt aggression. The high TV-viewing-high aggressive children are reported by their parents as somewhat less sociable and less likely to show specific talents. In keeping with the generally conventional or conservative style of the family that emerges for the high aggressive-high TV-viewing group, we also find this group as rated as lowest on family autonomy in relation to relatives.

Children's Responses to the Television-Character Picture Recognition Test

As was expected, the high television-viewing groups irrespective of aggression show the highest recognition scores on both "passes" through the series of pictures ($p=.01$, $p=.008$). As might be expected, the high TV-viewing groups show more recognition of Cartoon characters, of characters from Children's Television Commercial shows, but also supportive of the mothers' report, the children from the high aggressive-high TV group show less awareness than the other 3 groups of characters from the Educational Television Children's shows! High TV-viewers are more aware of characters from Situation-Comedies ($p=.04$) and the high aggressive-high TV-viewers are clearly the highest of the 4 groups in recognition of characters who are involved in the Variety-Game shows which include the hyperactive "Gong Show". As might be expected, these high TV-viewers are also more aware of the various Adult shows ($p=.005$) and the characters from the Action-Detective shows ($p=.003$). With respect to the latter types of show, the high aggressive-high TV-viewers are the highest in awareness of this type of show. Another striking result is the fact that the high aggressive-high TV-viewers show a recognition by far larger than the other groups of figures from News broadcasts ($p<.004$).

In general, then, the results of the family interviews do not provide any strong support for the possibility that intrinsic indications of conflict, overt aggressive behavior by parents or other aspects of family life such as trauma, stress, broken home or other indications can account for the aggression manifested by the children in the High Aggressive-High TV sample. Rather, the indications are that this group is especially distinctive in the fact that there is a general laxity about parental control of the TV set and that the family, while somewhat conventional, is somewhat disorganized, less concerned about the child's routine, and more limited than the other families from this sample in variety of hobbies and interests. Television-viewing seems to be a major outlet for the families of the High Aggressive-High TV-viewing children. The special relationship between the Action TV shows and aggression is once more pointed out since even those children in the High Aggressive-Low TV-viewing groups are more likely to be watching this type of show relative to other groups.

In conclusion, the evidence from this look into the homes of our children fails to support the argument that the linkage between TV viewing and aggression is a common outcome of an inherently aggressive family style. Rather, the data seem to suggest that the major distinctive characteristics of the families of High Aggressive-High TV-viewing children is simply their willingness to allow the child to watch a good deal of television and the failure to provide a variety of other patterns of stimulation for the child. It is hard to see how one could attribute the aggression these children show simply to the conventionality and restricted interest range of the family. Rather, it seems more likely that the exposure to extensive TV and particularly to shows like Variety and Game shows or Action-Detective shows may have an arousing effect that leads these children to be more aggressive at home as well as in the nursery school setting.

Families of children rated as High Aggressive-Low TV-viewing seem to reflect more internal possibilities that might foster aggressive behavior. While these families show considerable range of interests, cultural and intellectual for both parents, they are also characterized by the interviewer as "highest activity level", "most competitive", "most autonomous - each going separate ways" and most disorderly. Thus these families seem to show a good deal of self-directed, varied activities that preclude very much the watching of television (although they show a relatively higher proportion of watching Action-Detective shows than the other two groups). It is likely, therefore, that these families provide models for hyperactivity or potential aggressive behavior more clearly than the other families. The families of the Low Aggressive-High TV-viewing children also show a greater range of activity but seem casual about children's TV watching. They do not reflect, however, the internal competitiveness or disorderliness that might serve as instigators for aggression and they also seem to be less likely to be watching the Action shows.

Intervention Study

Experimental Expectations

The Intervention study was designed to provide parents with means of coping more effectively with the influence of television on the development of their children. Two major strategies were involved - an indirect but active approach in which stimulation of the child's imaginative play would presumably minimize some of the direct effects of TV and a direct, TV-control training procedure. The Cognitive training group was an active approach, offering parents something useful but essentially unrelated to the control of TV or the encouragement of imagination. The Control subjects served as a kind of baseline group.

A major feature of this first year's work was the development of training procedures and manuals. These are now available for dissemination.

If the training approaches were effective there are several procedures for obtaining evidence of this:

1) Children whose parents received Imagination training should reflect this by increases in their spontaneous imaginative play during the Post-Training period, Probes 3 and 4. They should also show increases in Positive Affect, Cooperation with Peers and Language Usage. Reductions in overall TV-viewing or at least in viewing of more indiscriminate or violent programming might be expected.

2) Children whose parents received training in Television-control should show a systematic drop in TV-viewing frequency and should also manifest a shift away from "less desirable" shows such as Action-Detective towards the Educational tV shows or toward children's shows generally or perhaps toward non-violent Adult Family shows if anything. Such viewing shifts might also be reflected in behavioral changes in the direction of more pro-social behavior and in more extensive language usage (if TV-viewing is indeed associated with less adequate language development).

To the extent that sheer intervention with parents is a factor in motivating parental action (a "Hawthorne" effect) one might expect more behavioral, language, and TV-viewing changes to be reflected by children whose parents were in the three intervention groups relative to the Control group. After all, the parents all knew that the study was related to television and its presumed effects.

Results

In general, the results of the intervention study can be described as disappointing. Extensive statistical analyses for experimental effects carried out using ANOVAs for Boys, Girls and the groups combined, employing difference scores rather than absolute scores, etc. reveal little evidence of significant main effects or even anticipated interactions. Table 7 presents the Pre- and Post- Means by groups for boys and girls for the Behavioral, Language and TV variables. They suggest on the whole little support for the expectations from the intervention efforts.

Especially unsatisfactory were the findings for the TV-control training group. Examination of the patterns of results suggests that this group is often almost indistinguishable from the Control group. The two groups receiving training in interaction with children around Imagination and Cognitive skills do, indeed, cluster together in effects and suggest that parents welcomed the opportunity to learn things they could do with their children. By contrast, the TV group (which was actually more resistant during training) was receiving information and methods for controlling or limiting their children's behavior.

If we examine our data when we join the Imaginative and Cognitive Training groups and compare them with the TV and Control groups, the results are somewhat more encouraging. While, again, major clearcut statistically significant results do not emerge, the pattern of differences are on the whole in the anticipated direction. This is especially true for the Language and TV-viewing variables. For example, we find that after parent training, the children whose parents were in Imaginative and Cognitive groups are watching significantly less Variety-Game shows, using significantly fewer TV references in their language than children from the TV or Control groups. Boys from the Imagination and Cognitive groups use significantly more words and make more utterances and make fewer TV references during play than do boys whose parents were in the TV or Control groups. Girls from the Imagination and Cognitive groups are showing significantly better Concentration and are watching significantly less Sports and News TV shows.

The overall pattern suggests that for the Behavioral variables the Imagination-Cognitive group children are showing more Imaginativeness of Play, better Concentration, more Peer and Adult Interaction;

they dropped off less than the TV-Controls in signs of Elation during play while the TV-Control children show more Fatigue or Sluggishness during play. For the Language variables the children whose parents received training in Imagination or Cognitive skills are showing more Words Used, more Utterances, longer Mean Lengths of Utterances, fewer TV-references, and more us of Future Verbs. With respect to TV, the Imagination-Cognitive groups have declined more in Weekly TV-viewing from their initial levels, but are concentrating better when they do watch TV. They are watching fewer Cartoons, have dropped off less in watching Children's shows, are watching fewer Situation-Comedies, Variety-Game shows or other adult fare including News and Sports.

Overall, the Imaginative and Cognitive Training groups show anticipated or "desirable" changes in 6/14 Behavioral variables, 9/11 TV-viewing variables and 5/6 Language variables. Overall, then, there are changes in 20/31 variables of importance which reflect the influence of the active intervention methods with parents compared to the Television-training or Control conditions. These effects are not strong enough to yield many statistically significant results but they do suggest that four parent-training sessions and the distribution of manuals can begin to have some influence on the subsequent behavior of children.

These data seem to support a view that direct efforts at training parents to control and limit children's viewing (even when the children are just Threes and Fours) may not be as effective as giving the parents more active things to do with the children, games and exercises to foster imagination and language usage. Our data as well as qualitative indications from talks with parents and letters received from them suggest that parents are uncomfortable with an emphasis on controlling the child's TV-viewing. It seems clear that by even three and four, the TV habit is so well established and the use of TV as a "companion" and baby-sitter so much a part of family life that direct efforts at change may not only be ineffective, but may be actively resisted by the parents. It is possible that three training sessions of two hours each with a "booster" a few months later may not be sufficient. More intensive training is planned in the next "go-around" of the research program with a new sample of children and parents. The Control group did show (for boys) an increase in TV-viewing and (for girls) only a very slight decline compared with larger declines in over-all viewing for the three intervention groups. We have reason to believe, therefore, that on an overall basis, intervention with parents can begin to lead to some constriction of their children's TV-viewing frequency.

Qualitative Findings: Parents' Reports

In general, as might be expected, the parents reported favorably on the training. More negative comments came from the Television-training group and comments from the parents in the Imagination and Cognitive groups expressed general appreciation. Some parents felt the games and exercises were "obvious" and "inane" but a larger percentage reported that they could enjoy the games and saw some changes in children. Several reported less TV-watching because "we have more things to do together now". A parent from the Imaginative group reports, "John is no longer in the TV syndrome. He comes in and starts playing by himself (not too quietly)."

Conclusions and Implications

This study examined the patterns of ongoing play manifested over a year's time by 141 three-and four-year old boys and girls at nursery schools and daycare centers. The relationships between such play and concurrent language usage and the child's patterns of television-viewing at home were examined during this period. Parents of the children were also randomly assigned to one of three Intervention groups or to a Control group. Intervention groups received training either in stimulating the children's imaginative play (Imagination Group), stimulating the child's cognitive and language development (Cognitive Group) or in controlling the child's television-viewing frequency and encouraging more discriminating use of the set (Television Group). The Control Group merely kept logs of children's viewing just as did the other parents.

Major findings of the development phase of the study may be summarized as follows:

1) Training of "hypothesis-blind" observers using sample written protocols and practice from films can lead to quite satisfactory rater agreements when pairs of observers record the spontaneous play of children in natural field settings.

2) Children by the ages of three and four already show significant consistencies in their play styles, language productivity, and patterns of television-viewing. Spontaneous behavior such as imaginativeness of play, interaction with peers, expressions of enjoyment are especially consistent. By three and four, children also seem to have well-established TV-viewing patterns (frequency and type of programming) which persist over a year's time.

3) Children's spontaneous behavior as well as their language usage and TV-viewing over one year can be categorized along three major dimensions of individual differences. One dimension reflects a relative emphasis on "Playfulness" and is characterized by high levels of fantasy and make-believe play, indications of positive emotions such as interest, curiosity and joy, high levels of interaction with other children, sharing and cooperation, greater verbal productivity and use of somewhat more advanced linguistic constructions such as Predicate Nominatives or Future Verbs. A second dimension reflects chiefly the television-viewing patterns of the child, but is also linked to the degree to which the child will manifest overt aggressive behavior at school or will show flashes of anger during play and use of imperatives or possessives in language. The third dimension chiefly reflects general language productivity.

4) According to parents, somewhat more than half of the children show evidence at home of imaginary companions or playmates. Children who engage in such fantasy play at home turn out also to play more imaginatively in school, show more positive emotions and extensive language usage. They also watch less television and are less overtly aggressive in school.

5) Children in this sample were watching between three and four hours of television a day by the ages of three or four. Television-viewing frequency increased over a year's time, especially for boys, with some decline for the girls who were four at the onset of the study. Although most viewing was of children's shows, sizable proportions of our sample also watched a great variety of adult programming including shows that were presented later than 9:00PM. Heaviest watchers were four-year old boys and children from lower socioeconomic status family backgrounds. Over the year's time, there were increases in Cartoon-watching for boys, some decline in watching the Educational TV shows, but, on the whole, relatively few general changes in viewing patterns. Heavy TV-viewing was associated with somewhat less advanced language usage by the children in their play.

6) Frequency of television-viewing and the viewing of Action-Detective TV shows were consistently linked to overt aggressive behavior by the children. When socioeconomic status, IQ and other background variables were partialled out, this linkage still persisted. A sequential correlational analysis suggested that initial levels of TV-viewing or viewing of the violent TV shows were correlated with later occurrence of overt aggressive behavior. A similar "cross lagged" effect could not be demonstrated for initial aggression leading to later high levels of TV-viewing. Thus, the possibility of a causal sequence of high frequency viewing and of viewing of violent content with the likelihood of a three- or four-year old being aggressive physically in nursery school over the year is supported in general by our results.

7) An examination through parent interviews at home of family life styles of those children who are at the extremes in TV-viewing frequency and in aggression has been carried out to examine other possible explanations for the findings linking TV and aggression.

Comparisons were made of family styles of children who represent extremes of Low Aggression-Low TV-viewing, Low Aggression-High TV-viewing, High Aggression-Low TV-viewing and High Aggression-High TV-viewing (10 in each group). On the whole, family characteristics relating to home organization, daily routines, patterns of discipline, parental aggressive behavior, traumatic events or stress in family life were more similar than different across the 4 groups. The High Aggressive-High TV-viewing children seemed to come from families which were especially lax about television-viewing allowing the child to control the TV set. These families showed a more restricted range of outside interests, fewer books or records and music, less bedtime story-telling and a more conventional family life. Aggressive children from both High and Low TV-viewing groups were far more likely to be watching Action-Detective shows with families than the Low Aggressives. Consistency of the child's aggressive behavior at home with that manifested in nursery school was evident. Children who watched more TV according to parents' reports (both in interview and from the TV-log data) were better able to identify characters from Action-Detective shows, Game shows and News broadcasts.

In general, results of the family interviews do not support the possible explanation that family aggressive styles can account both for nursery school aggression and high levels of TV-viewing, especially of aggressive programming. Rather, the interview data suggest that the laxity of control over TV-viewing and a general lack of alternative interests by the family may expose children to greater influence by the TV programming and yield the danger of more imitative aggressive or hyperactive behavior.

8) The effort to modify overt behavior and TV-viewing through provision of parent-training failed to produce many very strong, statistically reliable effects. In general, except for some reduction in TV-viewing from an initially high level, the TV-training was relatively ineffective, only slightly better than the control. When the 2 more active training procedures, Imagination and Cognition were linked and compared to the other 2 groups, there were indications of favorable training effects. Modest increases in imaginative play, peer interaction and in concentration as well as resistance to reductions in joyfulness characterized the children whose parents received Imaginative Play or Cognitive Training (compared to the TV-training or untreated Control). The children of parents in the former 2 groups also showed relative improvements in language usage and were also characterized by reductions in TV-viewing. It was clear that more active interventions were more effective than efforts to have parents restrain the already well-established TV-viewing habits of their pre-school children.

Training manuals for use by parents in encouraging imaginative play and cognitive growth in their children are now available for further use as a result of this study. The television-control manual is also available although its efficacy is less certain. A major implication of our intervention study is that TV-viewing habits in children are well-established by ages three and four and are tolerated by parents who find the TV useful as a "baby-sitter". The effort to change overall viewing patterns may have to start with younger children or may require a combination of cognitive, imaginative and TV-training for parents as well as for nursery school teachers. An evaluation of such a more massive effort is planned for the continuation of this grant with a new sample of pre-schoolers. In view of the results ofour family interviews, it would appear that special attention should be paid to the high risk, more aggressive children whose families show a combination of limited interests and laxity of control over the children's TV-viewing patterns.

References - Progress Report #2

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Table 1

Sample Characteristics

Males = 79

Females = 62

Ethnic minority = 25

	$\bar{X}$	SD
Age (months)	48.00	7.40
SES Index	2.61	0.56
Peabody PVT (IQ)	116.70	14.30
Barron Inkblots (M)	2.04	2.25
Imagination Interview	1.52	1.06

Table 1, cont.

Intervention Groups

	Imagination		Cognitive		T.V.		Control	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Age	47.8	6.42	47.84	8.34	46.88	7.63	49.33	7.16
S.E.S.	2.74	.60	2.5	.56	2.53	.50	2.58	.59
IQ	117.82	12.8	117.67	15.62	116.34	15.11	115.16	13.45
Barron N	1.88		2.03		1.77		2.41	
Imag. Int.	1.29		1.41		1.47		1.87	

Table 2

Television Viewing and Imaginative Play in Pre-Schoolers

Background Variables

1. Age at study onset (3 or 4)
2. SES estimate (1-5)
3. Sex
4. Ethnic Group (1=White, 2=Oriental, 3=Hispanic, 4=Black)

Predispositions

1. IQ (PPVT)
2. Imagination Interview (1-4)
3. Barron inkblots (M)
4. Imaginary Companion Interview

Behavioral Variables (1-5)

1. Imaginativeness
2. Affect
3. Concentration
4. Aggression
5. Interaction-peers
6. Interaction-adults
7. Cooperation-peers
8. Cooperation-adults
9. Fearful-tense
10. Angry-annoyed
11. Sad-downhearted
12. Fatigued-sluggish
13. Lively-excited
14. Elated-pleased

Language Variables

1. Total number words
2. Total number utterances
3. Mean length utterance
4. Percentage declarative sentences
5. Percentage imperative sentences
6. Percentage questions
7. Percentage exclamatory utterances
8. Percentage proper nouns
9. Percentage common nouns
10. Percentage total nouns
11. Percentage personal pronouns
12. Percentage impersonal pronouns
13. Percentage possessive pronouns
14. Percentage total pronouns
15. Percentage descriptive adjectives
16. Percentage possessive adjectives
17. Percentage attributive adjectives
18. Percentage predicate adjectives
19. Percentage total adjectives
20. Percentage adverbs
21. Percentage present verbs
22. Percentage past verbs
23. Percentage future verbs
24. Percentage conditional verbs
25. Percentage total verbs
26. Percentage Onomatopoeia

Table 2, cont.

TV Variables

1. Cartoons
2. Children's shows
3. Educational children's shows
4. Situation comedies
5. Variety and games
6. Adult shows
7. Action-violent shows
8. Sports
9. News
10. Monday TV
11. Tuesday TV
12. Wednesday TV
13. Thursday TV
14. Friday TV
15. Saturday TV
16. Sunday TV
17. Weekday TV
18. Weekend TV
19. Weekly TV
20. TV alone
21. TV with parents
22. TV with siblings
23. TV with other children
24. TV with other adults
25. TV with parents, siblings
26. TV with other children, adults
27. Incidence of repeat utterances
28. Percentage of television references in speech
29. TV with parents, other adults
30. TV with siblings, other kids
31. TV with parents, other kids
32. TV with parents, siblings, other kids
33. TV with parents, siblings, other adult
34. TV with parents, other kids and adults
35. TV with parents, siblings, other children, adults
36. TV with any adult
37. TV viewing intensity (concentration on show vs. distractibility)

Table 3

Correlations of Variable Across Observation Periods[1]

Behavioral Variable	Percent Correlations Significant at $p \leq .05$	Correlation between means of first two and last two observation periods
Imagination	100%	.385***
Affect	50	.296***
Concentration	0	.046
Aggression	50	.297***
Interaction/Peers	100	.520***
Interaction/Adults	50	.242**
Cooperation/Peers	33	.160
Cooperation/Adults	17	.100
Fear-Tense	50	.254***
Anger-Annoyed	67	.349***
Sad-Downhearted	33	.110
Fatigue-Sluggish	33	.236**
Lively-Excited	67	.270**
Elated-Pleased	83	.285**

[1] Eight observations during four "probes" or observation periods, Feb. 1977, April 1977, October 1977, February 1978.

*$p < .05$

**$p < .01$

***$p < .001$

Table 3

Correlations of Language Variables Across Observation Period

Language Variable	Percent Correlations Significant at p .05	Correlation Between Means of First Two and Last Two Observation Periods
Number of Words	83	.523***
Number of Utterances	83	.466***
Mean Length of Utterance	50	.130
Total Nouns (%)	0	-.002
Total Pronouns (%)	0	.009
Total Adjectives (%)	17	-.063
Total Verbs (%)	33	.069
Total TV References (%)	50	.400
Total Adverbs (%)	0	-.129
Total Onomatopoeia (%)	17	.155
Repeat Utterances (%)	33	.092
Predicate Nominatives (%)	0	-.003
Declarative Sentences (%)	17	.070
Imperative Sentences (%)	0	.072
Questions (%)	0	.120
Predicate Adjectives (%)	17	-.066
Future Verbs (%)	0	.036

Table 4

Patterns of Television Viewing Across Observation Periods

BOYS THREE YEARS OLD

TV Category	Feb. 1977		Apr. 1977		Oct. 1977		Feb. 1978	
	Mean Hrs. Watched	% of Ss who Watched	Mean Hrs. Watched	% of Ss who Watched	Mean Hrs. Watched	% of Ss who Watched	Mean Hrs. Watched	% of Ss who Watched
Cartoons	5.06		3.29	62	4.66	72	6.97	77
Childrens' Shows	6.74		6.40	91	6.86	84	5.32	93
Educ. Kids' Shows	9.01		4.04	76	4.97	69	6.07	77
Sit. Comedies	3.53		2.22	62	2.83	53	3.52	63
Variety/Game	2.19		1.16	47	1.48	56	2.25	57
Adult Shows	3.14		1.69	56	1.94	63	1.70	60
Action/Violent	2.99		1.72	59	1.77	56	1.73	60
Sports	.69		.13	12	.69	38	.47	30
News	3.23		1.47	44	.83	44	1.55	43
Total Weekly Viewing	36.56		20.78		22.33		28.90	

BOYS FOUR YEARS OLD

TV Category	Feb. 1977		Apr. 1977		Oct. 1977		Feb. 1978	
	Mean Hrs. Watched	% of Ss who Watched	Mean Hrs. Watched	% of Ss who Watched	Mean Hrs. Watched	% of Ss who Watched	Mean Hrs. Watched	% of Ss who Watched
Cartoons	12.48		6.02	85	10.62	86	11.60	90
Childrens' Shows	10.27		5.35	94	4.62	97	4.71	90
Educ. Kids' Shows	7.29		2.27	67	2.62	69	3.09	62
Sit. Comedies	5.69		3.55	82	4.52	76	4.85	79
Variety/Game	3.32		1.49	55	1.91	59	3.45	62
Adult Shows	3.74		1.42	42	1.93	59	2.07	55
Action/Violent	2.84		1.11	45	1.53	69	1.83	62
Sports	.74		.14	6	.69	34	.43	24
News	1.27		.86	39	.71	28	1.71	48
Total Weekly Viewing	47.40		21.48		28.06		33.14	

Table 4

Patterns of Television Viewing Across Observation Periods

GIRLS THREE YEARS OLD

TV Category	Feb. Mean Hrs. Watched	1977 % of Ss who Watched	Apr. Mean Hrs. Watched	1977 % of Ss who Watched	Oct. Mean Hrs. Watched	1977 % of Ss who Watched	Feb. Mean Hrs. Watched	1978 % of Ss who Watched
Cartoons	7.54		4.54	73	6.41	81	6.93	86
Childrens' Shows	6.31		5.64	92	4.05	90	4.95	100
Educ. Kids' Shows	7.25		4.14	73	6.45	86	8.41	90
Sit. Comedies	7.42		4.12	81	4.55	76	4.76	86
Variety/Game	4.29		2.06	50	2.76	71	3.48	86
Adult Shows	3.79		1.77	50	2.10	48	1.52	57
Action/Violent	2.89		1.48	38	1.38	52	1.21	62
Sports	.17		.23	8	.41	33	.38	19
News	1.81		1.39	35	1.64	43	1.21	48
Total Weekly Viewing	41.05		24.90		29.00		31.52	

GIRLS FOUR YEARS OLD

TV Category	Feb. Mean Hrs. Watched	1977 % of Ss who Watched	Apr. Mean Hrs. Watched	1977 % of Ss who Watched	Oct. Mean Hrs. Watched	1977 % of Ss who Watched	Feb. Mean Hrs. Watched	1978 % of Ss who Watched
Cartoons	6.23		3.41	45	1.97	79	4.25	75
Childrens' Shows	7.58		6.16	91	2.53	84	3.55	95
Educ. Kids' Shows	7.94		3.48	82	4.00	79	4.83	85
Sit. Comedies	3.06		2.84	68	1.32	58	3.55	70
Variety/Game	2.23		1.36	41	.84	42	2.53	65
Adult Shows	.94		.64	45	.45	37	1.25	55
Action/Violent	1.48		.86	18	.95	42	.80	30
Sports	.25		.11	9	.11	21	.08	5
News	1.85		.80	36	.34	32	1.78	50
Total Weekly Viewing	31.20		18.35		12.33		21.75	

Table 4, cont.

Patterns of TV Viewing Across Observation Periods

BOYS THREE YEARS OLD

Variable	Feb. 77 Mean Hrs.	Apr. 77 Mean Hrs.	Oct. 77 Mean Hrs.	Feb. 78 Mean Hrs.
Weekday TV	25.43	14.12	15.46	21.92
Weekend TV	11.13	6.66	6.82	6.98
Viewing Intensity (1-5)	3.37	3.46	3.79	3.91
TV Alone	9.26	5.63	5.55	5.95
TV with Parents	13.09	6.38	7.58	8.67
TV with Siblings	5.25	3.37	4.78	7.35
TV with Other Child	1.20	.32	.53	.52
TV with Other Adult	1.06	.78	.81	1.33
TV with Any Adult	20.84	10.22	11.30	14.70
TV with Parents & Siblings	5.04	2.43	1.75	3.27

BOYS FOUR YEARS OLD

Variable	Feb. 77 Mean Hrs.	Apr. 77 Mean Hrs.	Oct. 77 Mean Hrs.	Feb. 78 Mean Hrs.
Weekday TV	33.74	14.00	19.20	24.11
Weekend TV	13.65	7.48	8.86	9.03
Viewing Intensity (1-5)	4.14	4.24	4.30	4.36
TV Alone	14.66	6.11	8.09	6.95
TV with Parents	11.04	5.05	5.10	5.91
TV with Siblings	11.96	5.46	8.26	10.40
TV with Other Child	1.60	.74	.66	.60
TV with Other Adult	1.76	.96	.43	.66
TV with Any Adult	14.55	9.05	11.35	14.83
TV with Parents & Siblings	1.66	1.64	3.88	6.72

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Table 4, cont.

Patterns of TV Viewing Across Observation Periods

GIRLS-THREE YEAR OLDS

Variable	Feb. 77 Mean Hrs.	Apr. 77 Mean Hrs.	Oct. 77 Mean Hrs.	Feb. 78 Mean Hrs.
Weekday TV	31.28	18.29	22.19	25.56
Weekend TV	9.77	6.62	6.82	5.96
Viewing Intensity (1-5)	3.68	3.84	3.93	4.07
TV Alone	10.36	6.37	7.00	7.83
TV with Parents	16.60	7.25	9.02	9.41
TV with Siblings	5.86	4.06	7.14	7.71
TV with Other Child	.78	.81	.64	1.07
TV with Other Adult	3.72	2.19	1.05	1.07
TV with Any Adult	19.97	11.79	13.86	14.79
TV with Parents & Siblings	2.58	1.69	2.00	3.60

GIRLS-FOUR YEAR OLDS

Variable	Feb. 77 Mean Hrs.	Apr. 77 Mean Hrs.	Oct. 77 Mean Hrs.	Feb. 78 Mean Hrs.
Weekday TV	24.09	13.80	9.00	17.20
Weekend TV	7.10	4.54	3.33	4.55
Viewing Intensity (1-5)	3.78	3.96	3.90	4.19
TV Alone	8.87	3.87	3.53	5.30
TV with Parents	4.78	3.50	[illegible]	2.45
TV with Siblings	8.30	5.02	2.97	5.75
TV with Other Child	1.81	.50	.34	.83
TV with Other Adult	1.14	.48	.24	.33
TV with Any Adult	10.47	7.65	5.68	9.73
TV with Parents & Siblings	5.02	3.28	2.50	5.73

Table 4, cont.

TOTAL SAMPLE

TV Category	Feb. 77		Apr. 77		Oct. 77		Feb. 78	
	Mean Hrs. Watched	% of Ss who Watched	Mean Hrs. Watched	% of Ss who Watched	Mean Hrs. Watched	% of Ss who Watched	Mean Hrs. Watched	% of Ss who Watch
Cartoons	7.92	81	4.38	68	6.23	80	7.76	82
Childrens' Shows (Commercial TV)	7.76	94	5.88	92	4.82	90	4.71	94
Educ. TV Childrens' Shows	7.94	83	3.45	74	4.42	75	5.45	77
Sit. Comedies	4.88	78	3.15	73	3.39	66	4.17	74
Variety-Game Shows	3.11	66	1.50	49	1.75	58	2.91	65
Adult Family-Oriented Shows	3.35	65	1.43	49	1.69	54	1.68	57
Action-Detective-Violent Shows	2.25	56	1.33	43	1.47	54	1.47	55
Sportscasts	.50	22	.15	9	.52	33	.36	21
News	2.01	56	1.15	39	.87	37	1.57	48
Total Weekly Viewing	39.35		21.40		23.47		29.25	
Weekday Viewing	28.69		14.93		16.72		22.38	
Weekend Viewing	10.67		6.47		6.75		6.87	
TV Alone	10.87		5.58		6.20		6.51	
TV with Parent	11.61		5.65		6.11		6.78	
TV with Siblings	7.81		4.41		5.93		7.99	
TV with Parents & Siblings	3.58		2.22		2.55		4.83	
TV with Other Adult	1.84		1.08		.64		.88	
TV with Other Child	1.34		.58		.55		.72	
TV with Any Adult	25.87		9.74		10.79		13.77	
Viewing Intensity (1-5)	3.73		3.85		3.99		4.13	

Table 4

Patterns of Behavior Across Observation Periods

BOYS-THREE YEARS OLD						BOYS-FOUR YEARS OLD			
Variable	Feb. 77 Mean	Apr. 77 Mean	Oct. 77 Mean	Feb. 78 Mean	Variable	Feb.77 Mean	Apr. 77 Mean	Oct. 77 Mean	Feb. 78 Mean
Imagination	2.14	2.20	2.36	2.20	Imagination	2.62	2.42	2.61	2.67
Pos. Affect	2.81	3.03	3.11	3.00	Pos. Affect	3.21	3.24	3.05	2.81
Concentration	2.81	2.80	3.09	2.77	Concentration	3.12	3.05	3.04	3.37
Aggression	1.51	1.51	1.73	1.66	Aggression	1.51	1.33	1.38	1.65
Interaction with Peers	2.89	3.44	3.08	3.33	Interaction with Peers	3.28	3.65	3.29	3.57
Interaction with Adults	2.97	3.44	2.90	3.22	Interaction with Adults	3.10	3.46	2.91	3.02
Cooperation with Peers	2.90	2.97	2.84	2.98	Cooperation with Peers	3.27	3.33	3.01	3.09
Cooperation with Adults	2.88	3.04	2.82	2.55	Cooperation with Adults	2.99	3.29	2.69	3.17
Fearful/ Tense	1.26	1.15	1.22	1.17	Fearful/ Tense	1.19	1.05	1.19	1.10
Angry/ Annoyed	1.40	1.55	1.85	1.78	Angry/ Annoyed	1.43	1.28	1.64	1.78
Sad/ Downhearted	1.26	1.19	1.24	1.23	Sad/Downhearted	1.18	1.09	1.36	1.28
Fatigue/ Sluggish	1.44	1.16	1.32	1.23	Fatigue/ Sluggish	1.15	1.08	1.29	1.18
Lively/ Excited	2.60	2.91	2.99	3.16	Lively/ Excited	2.96	3.21	2.97	3.09
Elated/ Pleased	2.48	2.78	2.79	2.64	Elated/ Pleased	3.01	3.30	2.82	2.65

Table 4, cont.

Patterns of Behavior Across Observation Periods

GIRLS-THREE YEAR OLDS

Variable	Feb. 77 Mean	Apr. 77 Mean	Oct. 77 Mean	Feb. 78 Mean
Imagination	1.90	2.05	2.10	2.02
Pos. Affect	2.70	3.05	2.85	2.98
Concentration	2.93	2.88	2.87	3.02
Aggression	1.16	1.23	1.19	1.28
Interaction with Peers	2.88	3.37	2.99	3.22
Interaction with Adults	3.22	3.36	3.07	3.59
Cooperation with Peers	2.86	3.03	3.06	3.33
Cooperation with Adults	3.14	3.11	2.93	3.15
Fear	1.18	1.15	1.16	1.28
Anger	1.25	1.48	1.40	1.48
Sad	1.18	1.17	1.19	1.16
Fatigue	1.39	1.20	1.55	1.18
Lively	2.34	2.85	2.34	2.30
Elated	2.45	3.07	2.48	2.66

GIRLS-FOUR YEAR OLDS

Variable	Feb. 77 Mean	Apr. 77 Mean	Oct. 77 Mean	Feb. 7 Mean
Imagination	2.23	2.05	2.40	1.98
Pos. Affect	2.86	3.14	2.85	2.73
Concentration	3.15	2.92	3.19	2.79
Aggression	1.11	1.20	1.16	1.21
Interaction with Peers	3.18	3.38	3.37	3.18
Interaction with Adults	3.11	3.31	2.94	3.08
Cooperation with Peers	3.03	3.38	3.23	3.30
Cooperation with Adults	2.85	3.17	2.91	3.39
Fear	1.29	1.03	1.21	1.25
Anger	1.35	1.36	1.56	1.41
Sad	1.45	1.17	1.21	1.38
Fatigue	1.40	1.34	1.44	1.59
Lively	2.55	2.75	2.39	2.16
Elated	2.64	2.81	2.48	2.41

Table 4, cont.

TOTAL SAMPLE

Variable	Feb. 77 Mean	Apr. 77 Mean	Oct. 77 Mean	Feb. 78 Mean
Imaginativeness	2.24	2.20	2.36	2.25
Positive Affect	2.91	3.12	2.98	2.88
Concentration	3.00	2.92	3.05	3.00
Aggression	1.34	1.33	1.38	1.47
Interaction with Peers	3.06	3.47	3.19	3.34
Interaction with Adults	3.09	3.40	2.95	3.23
Cooperation with Peers	3.02	3.18	3.02	3.15
Cooperation with Adults	2.96	3.15	2.83	2.98
Fearful/Tense	1.23	1.10	1.20	1.19
Angry/Annoyed	1.37	1.42	1.63	1.63
Sad/Downhearted	1.26	1.15	1.25	1.27
Fatigued/Sluggish	1.34	1.19	1.39	1.29
Lively/Excited	2.63	2.94	2.70	2.72
Elated/Pleased	2.66	2.99	2.66	2.59

Table 4 (cont.)

Patterns of Language Across Observation Periods (cont.)

Total Sample

Variable	Mean Feb '77	Mean Apr. '77	Mean Oct. '77	Mean Feb. '78
Number of Words	96.0	131.7	137.3	143.3
No. of Utterances	23.2	30.9	30.1	32.4
Mean Length Utterance	4.03	4.11	4.31	4.24
Declarative Sentences (%)	54.6	53.4	54.5	56.6
Imperative Sentences (%)	23.6	28.5	24.5	23.7
Questions (%)	21.8	18.1	17.1	18.0
Exclam. Utterances (%)	17.6	14.1	19.4	20.6
Proper Nouns (%)	3.0	3.3	2.4	2.2
Common Nouns (%)	11.2	11.0	9.9	10.1
Total Nouns (%)	14.1	14.3	12.3	12.3
Personal Pronouns (%)	12.8	13.4	12.1	12.4
Impersonal Pronouns (%)	8.6	7.4	6.8	7.9
Possessive Pronouns (%)	4.0	2.0	2.0	1.9
Total Pronouns (%)	25.3	22.7	20.9	22.3
Descriptive Adjectives (%)	3.2	3.4	4.0	3.7
Possessive Adjectives (%)	.1	.1	.1	.2
Total Adjectives (%)	4.3	4.9	6.1	5.1
Adverbs (%)	8.9	9.6	10.3	9.7
Present Verbs (%)	18.5	19.4	16.2	16.9
Past Verbs (%)	2.1	2.0	2.0	2.7
Future Verbs (%)	1.3	1.4	1.4	1.4

Table 4 (continued)

Patterns of Language Across Observation Periods (cont.)

Total Sample

Variable	Mean Feb.'77	Mean Apr.'77	Mean Oct.'77	Mean Feb.'77
Conditional Verbs (%)	.6	1.6	.4	.3
Total Verbs (%)	22.5	23.0	20.0	21.3
Onomatopoeia (%)	2.3	2.5	3.1	2.4
TV References (%)	.7	.4	.7	.3
Predicate Nominatives (%)	.7	1.7	1.7	1.7

Table 4 (continued)

Patterns of Language Across Observation Periods

	BOYS THREE YEARS OLD				BOYS FOUR YEARS OLD			
Variable	Mean Feb.'77	Mean Apr.'77	Mean Oct.'77	Mean Feb.'78	Mean Feb.'77	Mean Apr.'77	Mean Oct.'77	Mean Feb.'78
No. Words	63.4	110.3	132.5	124.1	108.9	165.6	154.9	190.9
No. of Utterances	17.0	27.3	30.5	29.6	26.1	37.5	33.2	41.8
Mean Length Utterance	3.59	3.95	4.03	4.08	4.18	4.19	4.35	4.54
Declarative Sentences (%)	47.1	54.4	48.5	54.7	56.5	52.4	58.6	60.5
Imperative Sentences (%)	26.1	26.6	31.7	25.6	23.0	25.7	21.4	24.3
Questions (%)	26.7	19.0	14.1	16.6	20.4	21.9	17.1	15.2
Exclamatory Utterances (%)	19.7	14.7	26.4	29.4	19.1	16.5	18.0	21.4
Proper Nouns (%)	3.9	3.6	2.2	2.9	2.4	2.7	2.8	2.6
Common Nouns (%)	10.5	12.6	9.1	9.8	11.1	10.4	8.9	9.9
Total Nouns (%)	14.4	16.1	11.3	12.6	13.5	13.1	11.7	12.5
Personal Pronouns (%)	11.2	12.5	11.6	12.1	13.5	14.4	11.1	12.5
Impersonal Pronouns (%)	9.6	7.8	6.2	6.6	7.9	6.2	6.9	7.6
Possessive Pronouns (%)	2.6	2.6	2.2	2.0	1.8	1.4	1.9	1.9
Total Pronouns (%)	23.4	22.9	20.1	20.8	23.2	22.0	19.9	21.9

Table 4 (continued)

Patterns of Language Across Observation Periods (cont.)

	BOYS THREE YEARS OLD				BOYS FOUR YEARS OLD			
Variable	Mean Feb. 77	Mean Apr.'77	Mean Oct.'77	Mean Feb.'78	Mean Feb.'77	Mean Apr.'77	Mean Oct.'77	Mean Feb. 78
Descriptive Adjectives (%)	2.5	3.6	3.9	4.0	4.3	3.7	4.4	3.7
Possessive Adjectives (%)	.2	.1	.1	.3	.2	.1	.3	.2
Total Adjectives (%)	3.7	5.0	4.8	4.3	5.5	5.0	6.1	5.2
Adverbs (%)	9.1	9.7	13.2	10.0	8.0	9.5	8.8	10.1
Present Verbs (%)	18.7	20.1	16.0	17.1	17.5	18.6	15.2	17.1
Past Verbs (%)	2.1	1.3	2.2	2.7	2.3	2.3	1.9	2.6
Future Verbs (%)	1.2	1.6	1.2	1.1	1.8	1.4	1.3	1.7
Conditional Verbs (%)	.6	.6	.1	.3	.7	.7	.4	.4
Total Verbs (%)	22.7	23.0	19.5	21.2	22.1	22.4	20.0	21.8
Onomatopoeia (%)	3.6	2.9	1.3	4.4	2.6	4.0	3.1	2.5
TV References (%)	.6	.3	.1	.6	1.5	.5	.7	.3
Predicate Nominatives (%)	.8	2.4	1.9	1.9	.9	1.3	1.7	1.7

Table 4 (continued)

Patterns of Language Across Observation Periods

Variable	GIRLS THREE YEARS OLD Mean Feb.'77	Mean Apr.'77	Mean Oct.'77	Mean Feb.'78	GIRLS FOUR YEARS OLD Mean Feb.'77	Mean Apr.'77	Mean Oct.'77	Mean Feb.'78
No. Words	76.5	108.2	114.4	137.9	139.1	139.2	143.5	112.0
No. of Utterances	19.7	26.8	26.8	32.2	30.9	31.3	29.2	24.5
Mean Length Utterance	3.79	3.88	4.46	4.20	4.59	4.42	4.47	4.11
Declarative Sentences (%)	58.6	49.2	53.9	58.8	57.6	57.3	57.1	52.2
Imperative Sentences (%)	19.3	36.6	27.6	23.0	25.3	27.1	16.9	21.5
Questions (%)	22.1	14.2	18.5	18.2	17.1	15.7	19.3	22.7
Exclamatory Utterances (%)	16.8	15.5	23.8	16.1	14.0	9.0	8.6	13.5
Proper Nouns (%)	3.2	3.9	2.6	1.2	2.4	3.1	1.9	1.8
Common Nouns (%)	13.3	9.4	9.9	10.6	10.0	11.3	12.0	10.3
Total Nouns (%)	16.5	13.3	12.5	11.7	12.4	14.4	13.8	12.0
Personal Pronouns (%)	13.1	13.5	13.0	13.1	13.3	13.1	13.0	12.2
Impersonal Pronouns (%)	10.0	8.0	7.4	8.2	6.9	7.8	7.0	9.5
Possessive Pronouns (%)	5.9	2.3	2.3	2.1	6.5	1.6	1.5	1.7
Total Pronouns (%)	29.1	23.8	22.7	23.5	26.6	22.5	21.5	23.4

Table 4 (continued)

Patterns of Language Across Observation Periods (cont.)

	GIRLS THREE YEARS OLD				GIRLS FOUR YEARS OLD			
Variable	Mean Feb.'77	Mean Apr.'77	Mean Oct.'77	Mean Feb.'78	Mean Feb.'77	Mean Apr.'77	Mean Oct.'77	Mean Feb.'78
Descriptive Adjectives (%)	2.8	2.1	4.1	3.5	3.2	4.1	3.6	2.9
Possessive Adjectives (%)	.0	.1	.1	.2	.1	.1	.1	.2
Total Adjectives (%)	3.7	3.4	8.9	6.2	4.2	5.8	4.9	4.8
Adverbs (%)	7.2	10.5	9.0	10.0	11.3	8.9	10.0	8.7
Present Verbs (%)	20.6	19.3	18.1	16.6	17.7	19.6	16.0	16.7
Past Verbs (%)	1.5	2.4	1.8	2.9	2.6	2.3	1.9	2.5
Future Verbs (%)	1.1	1.1	1.3	1.7	1.1	1.1	1.7	1.1
Conditional Verbs (%)	.5	3.6	.5	.3	.4	1.9	.5	.2
Total Verbs (%)	23.4	23.7	21.7	21.6	21.7	23.2	20.0	20.5
Onomatopoeia (%)	1.2	1.6	1.6	1.5	1.6	.9	1.3	.9
TV References (%)	.2	.4	.0	.1	.2	.2	.1	.0
Predicate Nominatives (%)	.6	1.4	1.6	1.7	.5	1.4	1.9	1.4

Table 5

Rotated Factor Loadings
(Based on Eight Independent Observations Over One Year's Time)
Boys (N=79)

Factor 1

Happy, Imaginative Playfulness

Variable	Loading
Imaginativeness	.663
Positive Affect	.761
Concentration	.635
Interaction/Peers	.785
Interaction/Adults	.435
Cooperation/Peers	.717
Cooperation/Adults	.558
Fear	-.442
Sad	-.396
Fatigue	-.604
Lively	.670
Elated	.750
Age in months	.424
PPVT IQ	.343
Barron M	.299
Imagination Interv.	.217
Imag. Companion Index	.357
TV Viewing Intensity	.469
No. Words Spoken	.759
No. Utterances	.750
Mean Length of Utterance (MLU)	.473
Total Adjectives	.421
Future Verbs	.329
Predicate Nominatives	.332

Factor 2

TV-Viewing

Variable	Loading
Aggression	.553
Cooperation/Adults	-.334
Anger	.525
SES	.470
Ethnic	.323
Weekday TV	.842
Weekend TV	.890
Weekly TV .	.869
Cartoons	.669
Kids Shows (Commercial)	.555
Sitcoms	.718
Variety/Game/Talk	.763
Adult Shows	.719
Action/Violent	.722
News	.519

Factor 3

Language

Variable	Loading
Interaction/Peers	.296
Mean Length Utterance	.702
Total Nouns	.717
Total Pronouns	.802
Total Verbs	.886
Adverbs	.625
Declarative Sentences	.544
Imperative Sentences	.520
Questions	.525
Exclamations	.346
Future Verbs	.256

Table 5

Rotated Factor Loadings

(Based on Eight Independent Observations Over One Year's Time)
Girls (N=62)

Factor 1		Factor 2		Factor 3	
Happy, Imaginative Playfulness		TV-Viewing		Language	
Variable	Loading	Variable	Loading	Variable	Loading
Imaginativeness	.747	Aggression	.603	Mean Length Utterances	.593
Positive Affect	.827	Anger	.283	Total Pronouns	.449
Concentration	.476	PPVT IQ	-.327	Total Adjectives	.770
Interaction/Peers	.858	SES	.478	Total Verbs	.760
Interaction/Adults	.617	Weekday TV	.932	Adverbs	.277
Cooperation/Peers	.784	Weekend TV	.907	Repeat Utterances	.584
Cooperation/Adults	.514	Weekly TV	.942	Predicate Nominatives	.368
Fear	-.566	Cartoons	.650	Declarative Sentences	.610
Sad	-.626	Kids Shows (Commercial)	.488	Imperative Sentences	.333
Fatigue	-.628	Sitcoms	.886	Exclamatory Utterances	.578
Lively	.732	Variety/Game Shows	.848	Adjective Predicates	.734
Elated	.731	Adult Shows	.702		
PPVT IQ	.367	Action/Violent	.798		
Imagination Interview	.220	News	.486		
No. Words Spoken	.742	Onomatopoeia	.354		
No. Utterances	.766	Imperative Sentences	.349		
Mean Length Utterances (MLU)	.397				
Total Pronouns	-.343				
Predicate Nominative	.363				
Imperative Sentences	.328				
Future Verbs	.521				

Table 6

Results of t-Tests
Subjects Categorized by High-Low Aggression, Imagination, and Weekly TV-Viewing

MALES

Variable	Hi-Aggression	Lo-Aggression	T-Value
Concentration	2.87	3.12	-3.173***
Cooperation/Peers	2.87	3.13	-2.280*
Fear	1.21	1.12	2.212*
Anger	1.82	1.39	4.860***
Sad	1.31	1.16	2.412*
Weekday TV	23.90	11.97	2.168*
Weekly TV	26.96	20.47	2.076*
Viewing Intensity	3.70	4.03	-1.938
Cartoons	9.23	5.91	2.193*
Sitcoms	4.95	2.97	1.964
Action Shows	2.66	1.36	2.345*
News	2.06	1.10	1.875
IQ (PPVT)	113.39	120.78	-2.063*
Barron (M)	1.07	2.03	-1.984

Table 6

T-Tests

MALES

	MEANS		
Variable	Hi-Imagination	Lo-Imagination	T-Value
Affect	3.32	2.74	6.806***
Concentration	3.11	2.89	2.756***
Peer Interaction	3.56	3.02	5.111***
Adult Interaction	3.24	3.06	2.258*
Peer Cooperation	3.21	2.80	3.951***
Fatigue	1.12	1.34	-4.08***
Lively	3.37	2.53	7.789***
Elated	3.17	2.43	6.909***
Weekday TV	23.44	17.42	2.325*
Weekly TV	26.28	19.69	2.109*
Intensity of TV Viewing	4.03	3.70	1.951*
Cartoons	8.87	5.53	2.209*
Kids Shows (Commercial)	7.53	4.74	3.134**
No. of Words Spoken	161.32	89.98	5.754***
No. of Utterances	36.57	21.93	5.965***
Mean Length Utterance (MLU)	4.12	3.47	2.966**
Age in Months	49.49	45.68	2.194*

Table 6

T-Tests

MALES

	MEANS		
Variable	Hi-TV-Viewing	Lo-TV-Viewing	T-Value
Imagination	2.56	2.27	2.01*
Aggression	1.70	1.39	2.95***
Angry/Annoyed	1.69	1.48	2.12*
Cartoons	11.11	3.66	5.83***
Commercial Kids Shows	8.46	4.12	5.494***
Sitcoms	6.10	1.60	5.102***
Variety/Game Shows	3.47	.65	5.622***
Adult Shows	3.46	.90	5.448***
Action/Violent Shows	3.02	.85	4.243***
News	2.29	.77	3.129**
IQ (PPVT)	113.29	121.05	-2.18
SES	2.75	2.45	2.69**
No. of Imaginary Companions	1.24	1.62	-2.20*

Table 6

T-Tests

FEMALES

	MEANS		
Variable	Hi-Aggression	Lo-Aggression	T-Value
Anger	1.60	1.32	3.169**
Weekday TV	32.43	17.05	3.364**
Weekend TV	10.62	4.91	4.055***
Weekly TV	32.09	17.91	3.050**
Cartoons	9.92	3.48	3.645***
Kids Shows (Commercial)	7.74	4.75	2.305*
Sitcoms	8.13	2.59	3.972***
Variety/Game	5.02	1.72	3.057**
Adult Shows	3.17	1.11	2.102*
Action/Violent Shows	3.07	.99	2.881**
SES	2.84	2.50	2.073*

Table 6

T-Tests

FEMALES

	MEANS		
Variable	Hi-Imagination	Lo-Imagination	T-Value
Affect	3.10	2.76	2.757**
Concentration	3.11	2.87	2.747**
Interact with Peers	3.54	2.92	4.158***
Cooperation with Peers	3.37	2.92	3.784***
Lively-Excited	2.69	2.32	2.221*
Elated	2.85	2.49	2.464
Number of Words	159.23	91.49	4.442***
Number of Utterances	35.39	21.56	4.554***
Mean Length of Utterances	4.24	3.68	2.144*

Table 6

T-Tests

FEMALES

	MEANS		
Variable	Hi-TV-Viewing	Lo-TV-Viewing	T-Score
Aggression	1.32	1.13	2.754**
Cartoons	10.92	2.82	5.072***
Commercial Kids Shows	8.64	4.19	3.678***
Sitcoms	8.79	2.12	5.257***
Variety/Games	6.40	.95	6.222***
Adult Shows	3.68	.81	3.114**
Action/Violent Shows	3.59	.69	4.452***
News	2.58	.90	2.744**
SES	3.00	2.46	3.374**
Age in Months	45.50	49.71	2.235*

Table 7

Means for Behavioral, Language, and TV Variables
(by sex) Measured Pre- and Post- Training Sessions

Pre and Post Imagination Means

	Pre Measure (Feb., Apr., obs., 1977)	Post Measure (Oct., Feb., obs. 1978)	N
Males			
Imagination	2.35	2.58	20
Cognitive	2.11	2.47	17
Television	2.46	2.41	17
Control	2.50	2.32	15
Females			
Imagination	2.03	2.24	12
Cognitive	2.40	2.55	11
Television	2.60	2.17	13
Control	2.16	1.93	21
			126

Pre and Post Affect Means

	Pre Measures (Feb., Apr., obs., 1978)	Post Measures (Oct., Feb., obs, 1978)	N
Males			
Imagination	3.024	3.04	20
Cognitive	3.02	2.93	17
Television	3.01	3.05	17
Control	3.06	2.96	15
Females			
Imagination	3.16	3.05	12
Cognitive	3.13	2.95	11
Television	3.01	2.85	13
Control	2.91	2.74	21
			126

Pre and Post Aggression Means

	Pre Measures (Feb., Apr., obs., 1978)	Post Measures (Oct., Feb., obs., 1978)	N
Males			
Imaginative	1.44	1.56	20
Cognitive	1.31	1.44	17
Television	1.47	1.74	17
Control	1.65	1.62	15
Females			
Imaginative	1.26	1.37	12
Cognitive	1.12	1.16	11
Television	1.06	1.08	13
Control	1.25	1.25	21
			126

Pre and Post Interaction With Peers Means

	Pre Measures (Feb., April, obs., 1977)	Post Measures (Oct., Feb., obs., 1978)	N
Males			
Imaginative	3.31	3.40	20
Cognitive	3.33	3.36	17
Television	3.23	3.15	17
Control	3.31	3.19	15
Females			
Imaginative	3.48	3.28	12
Cognitive	3.44	3.53	11
Television	3.07	3.27	13
Control	3.24	3.05	21
			126

Pre and Post Cooperation With Peers Means

	Pre Measures (Feb., April, obs., 1977)	Post Measures (Oct., Feb., obs., 1978)	N
Males			
Imaginative	3.20	2.01	20
Cognitive	3.32	3.02	17
Television	3.07	2.93	16
Control	2.80	3.08	15
Females			
Imaginative	3.04	3.15	12
Cognitive	3.30	3.30	11
Television	3.04	3.32	12
Control	3.21	3.19	20
			123

Pre and Post Interaction With Adults

(Pre Measures - Feb., Apr. '77; Post Measures - Oct. '77, Feb. '78)

Males	Pre (N=77)		Post (N=66)	
Imaginative	3.34	20	3.08	19
Cognitive	3.16	19	3.03	17
TV	3.22	19	2.92	17
Control	3.31	19	3.00	13
Females	Pre (N=62)		Post (N=52)	
Imaginative	3.20	14	2.98	11
Cognitive	3.48	12	3.83	8
TV	3.23	15	3.17	12
Control	3.13	21	3.03	21

Pre and Post Cooperation With Adult Means

	Pre Measures (Feb., Apr., obs., 1977)	Post Measures (Oct., Feb., obs., 1978)	N
Males			
Imaginative	3.00	2.87	18
Cognitive	3.16	3.08	14
Television	2.84	2.53	13
Control	2.94	2.62	11
Females			
Imaginative	3.13	3.08	9
Cognitive	3.27	3.22	7
Television	3.15	3.04	10
Control	2.95	3.05	18
			100

Pre and Post - Fear

(Pre Measures - Feb., Apr. '77, Post Measures - Oct. '77, Feb. 78)

Males	Pre (N=79)		Post (N=69)	
Imaginative	1.20	21	1.23	20
Cognitive	1.06	20	1.07	17
TV	1.22	19	1.21	17
Control	1.17	19	1.17	15

Females	Pre (N=62)		Post (N=57)	
Imaginative	1.13	14	1.15	12
Cognitive	1.10	12	1.31	11
TV	1.18	15	1.25	13
Control	1.21	21	1.21	21

Pre and Post Anger Means

	Pre Measure (Feb., Apr., 1977)	Post Measure (Oct., Feb., 1978)	N
Males			
Imaginative	1.536	1.823	20
Cognitive	1.274	1.589	17
TV	1.355	1.753	17
Control	1.391	1.682	15
Females			
Imaginative	1.424	1.549	12
Cognitive	1.237	1.440	11
TV	1.212	1.344	13
Control	1.415	1.491	21
			126

Pre and Post - Sad Means

(Pre Measures - Feb., Apr. '77; Post Measures - Oct. '77, Feb. '78)

Males	Pre (N=79)		Post (N=69)	
Imaginative	1.19	21	1.35	20
Cognitive	1.11	20	1.27	17
TV	1.22	19	1.26	17
Control	1.20	19	1.22	15
Females	**Pre (N=62)**		**Post (N=57)**	
Imaginative	1.09	14	1.17	12
Cognitive	1.14	12	1.24	11
TV	1.29	15	1.23	13
Control	1.37	21	1.26	21

Pre and Post - Fatigue

(Pre Measures - Feb., Apr. '77; Post Measures - Oct. '77, Feb. '78)

Males	Pre (N=79)		Post (N=69)	
Imaginative	1.16	21	1.10	20
Cognitive	1.23	20	1.31	17
TV	1.25	19	1.29	17
Control	1.21	19	1.38	15
Females	**Pre (N=62)**		**Post (N=57)**	
Imaginative	1.30	14	1.33	12
Cognitive	1.21	12	1.49	11
TV	1.33	15	1.39	13
Control	1.44	21	1.51	21

Pre and Post - Lively/Excited

(Pre Measures - Feb., Apr. '77; Post Measures - Oct. '77, Feb. '78)

Males	Pre (N=79)		Post (N=69)	
Imaginative	3.20	21	3.26	20
Cognitive	2.91	20	2.90	17
TV	2.68	19	2.98	17
Control	2.85	19	2.95	15
Females	**Pre (N=62)**		**Post (N=57)**	
Imaginative	2.75	14	2.47	12
Cognitive	2.87	12	2.44	11
TV	2.27	15	2.29	13
Control	2.66	21	2.15	21

Pre and Post - Elated/Pleased

(Pre Measures - Feb., Apr. '77; Post Measures - Oct. '77, Feb. '78)

Males	**Pre (N=79)**		**Post (N=69)**	
Imaginative	2.98	21	2.90	20
Cognitive	2.93	20	2.66	17
TV	2.81	19	2.67	17
Control	2.82	19	2.60	15
Females	**Pre (N=62)**		**Post (N=57)**	
Imaginative	3.04	14	2.73	12
Cognitive	2.89	12	2.67	11
TV	2.53	15	2.37	13
Control	2.62	21	2.36	21

Pre and Post Intensity of Television-Viewing Means

	Pre Measures (Feb., Apr., 1978)	Post Measures (Oct., Feb., 1978)	N
Males			
Imaginative	3.53	4.10	20
Cognitive	4.05	4.26	18
Television	3.77	3.97	16
Control	3.66	3.92	8
Females			
Imaginative	3.85	4.21	12
Cognitive	3.81	4.11	9
Television	3.82	3.92	12
Control	3.56	3.72	9
			104

Pre and Post Weekly Television-Viewing Hours Means

	Pre Measures (Feb., Aprl, 1977)	Post Measures (Oct., Feb., 1978)	N
Males			
Imaginative	27.79	26.86	20
Cognitive	28.97	22.89	18
Television	34.47	29.00	16
Control	35.73	42.72	8
Females			
Imaginative	42.18	38.72	12
Cognitive	28.66	24.81	9
Television	16.47	15.82	12
Control	26.11	25.27	9
			104

Pre and Post - Cartoons

(Pre Figures - Feb., Apr. '77; Post Figures - Oct. '77, Feb. '78)

Males	Pre (N=72)		Post (N=62)	
Imaginative	6.00	21	7.58	20
Cognitive	5.76	20	6.61	18
TV	5.70	19	8.06	16
Control	10.10	12	15.63	8

Females	Pre (N=55)		Post (N=42)	
Imaginative	7.88	14	8.35	12
Cognitive	7.31	12	4.50	9
TV	2.82	15	3.75	12
Control	3.93	14	3.89	9

Pre and Post - Commercial Kids' Shows

(Pre Figures - Feb, Apr., '77; Post Figures - Oct. '77, Feb. '78)

Males	Pre (N=72)		Post (N=62)	
Imaginative	6.12	21	6.55	20
Cognitive	6.45	20	3.96	18
TV	7.95	19	5.66	16
Control	8.00	12	5.09	8
Females	Pre (N=55)		Post (N=42)	
Imaginative	6.46	14	5.15	12
Cognitive	7.54	12	3.86	9
TV	4.92	15	3.02	12
Control	7.25	14	3.75	9

Pre and Post Education Television-Viewing Means

	Pre Measures (Feb., '77, Apr., 1978)	Post Measures (Oct., Feb., 1978)	N
Males			
Imaginative	4.60	3.58	20
Cognitive	5.04	3.38	18
Television	8.01	6.08	16
Control	2.560	2.94	8
Females			
Imaginative	5.54	6.71	12
Cognitive	3.81	4.11	9
Television	4.58	5.94	12
Control	2.14	3.34	9
			104

Pre and Post Variety. Game and Talk Shows Means

	Pre Measure	Post Measure	N
Males			
Imaginative	2.295	2.679	20
Cognitive	2.381	1.247	18
Television	1.774	1.958	16
Control	2.406	4.688	8
Females			
Imaginative	4.431	4.639	12
Cognitive	2.354	2.229	9
Television	.625	1.153	12
Control	2.725	4.356	9
			104

Pre and Post Action Shows Means

	Pre Measures	Post Measures	N
Males			
Imaginative	3.009	2.637	20
Cognitive	1.414	1.451	18
Television	1.819	1.373	16
Control	3.125	1.906	8
Females			
Imaginative	2.972	2.250	12
Cognitive	.833	.562	9
Television	.569	.417	12
Control	3.462	1.925	9
			104

Pre and Post Situation Comedy Viewing Means

	Pre Measures (Feb., Apr., 1977)	N 72	Post Measures (Oct., Feb., 1978)	N 62
Males				
Imaginative	3.14	21	3.87	20
Cognitive	3.8	20	3.11	18
Television	3.32	19	3.16	16
Control	4.69	12	7.56	8
Females		N 55		N 42
Imaginative	6.09	14	5.29	12
Cognitive	3.88	12	3.58	9
Television	2.20	15	1.13	12
Control	5.70	14	5.64	9

Pre and Post Miscellaneous Adult Viewing Means

	Pre Measures (Feb., Apr., 1977)	N 72	Post Measures (Oct., Feb., 1978)	N 62
Males				
Imaginative	2.68	21	1.89	20
Cognitive	2.11	20	1.56	18
Television	2.54	19	1.77	16
Control	2.08	12	2.75	8
Females		N 55		N 42
Imaginative	2.55	14	1.83	12
Cognitive	1.23	12	1.61	9
Television	.85	15	.98	12
Control	2.46	14	1.33	9

Pre and Post Sports Viewing Means

	Pre Measures (Feb., Apr., 1977)	N 72	Post Measures (Oct., Feb., 1978)	N 62
Males				
Imaginative	.25	21	.78	20
Cognitive	.68	20	.44	18
Television	.38	19	.59	16
Control	.19	12	.53	8
Females		N 55		N 43
Imaginative	.34	14	.35	12
Cognitive	.40	12	.11	9
Television	0.00	15	.18	12
Control	0.00	14	.28	9

Pre and Post News Viewing Means

	Pre Measures (Feb., Apr., 1977)	N	Post Measures (Oct., Feb., 1978)	N
Males		72		62
Imaginative	1.05	21	1.21	20
Cognitive	1.69	20	.85	18
Television	2.25	19	1.05	16
Control	1.83	12	1.94	8
		N		N
Females		55		42
Imaginative	1.86	14	.73	12
Cognitive	1.77	12	1.56	9
Television	0.60	15	1.77	12
Control	1.66	14	1.61	9

Number of Words

	Pre	Post	N
Males			
Imaginative	104.95	160.75	20
Cognitive	82.77	142.22	17
Television	124.32	148.50	16
Control	139.26	140.94	15
Females			
Imaginative	104.67	95.67	12
Cognitive	162.59	173.09	11
Television	156.73	151.44	13
Control	105.08	114.98	21
			125

Number of Utterances

	Pre	Post	N
Males			
Imaginative	25.64	35.97	20
Cognitive	20.78	31.54	17
Television	30.67	32.27	16
Control	33.31	34.14	15
Females			
Imaginative	26.17	21.64	12
Cognitive	37.38	36.89	11
Television	34.47	32.92	13
Control	25.14	26.55	21
			125

Pre and Post Mean Length of Utterance Means

	Pre Measures (Feb., Apr., 1977)	N	Post Measures (Oct., Feb., 1978)	N
Males		78		69
Imaginative	3.96	21	4.43	20
Cognitive	3.81	20	4.25	17
Television	4.01	18	4.30	17
Control	4.15	19	3.75	15
Females		61		57
Imaginative	4.09	14	4.44	12
Cognitive	4.13	12	4.63	11
Television	3.99	14	4.24	13
Control	4.17	21	4.12	21

Pre and Post Future Verb Means

	Pre Measures (Feb., Apr., 1977)		Post Measures (Oct., Feb., 1978)	
Males		N 78		N 69
Imaginative	.018	21	.015	20
Cognitive	.014	20	.014	17
Television	.013	18	.012	17
Control	.013	19	.012	15
Females		N 61		N 57
Imaginative	.012	14	.019	12
Cognitive	.017	12	.016	11
Television	.010	14	.014	13
Control	.011	21	.011	21

Pre and Post Predicate Nominative Means

	Pre Measures (Feb., Apr., 1978)	N	Post Measures (Oct., Feb., 1978)	N
Males		78		69
Imaginative	.012	21	.020	20
Cognitive	.019	20	.016	17
Television	.017	18	.015	17
Control	.007	19	.014	15
Females		61		57
Imaginative	.006	14	.012	12
Cognitive	.015	12	.023	11
Television	.006	14	.018	13
Control	.012	21	.014	21

Pre and Post Television Reference Means

	Pre Measures (Feb., Apr., 1977)	N	Post Measures (Oct., Feb., 1978)	N
Males		78		69
Imaginative	.009	21	.005	20
Cognitive	.003	20	.002	17
Television	.008	18	.022	17
Control	.002	19	.003	15
		N		N
Females		60		57
Imaginative	.004	14	.001	12
Cognitive	.003	12	.000	11
Television	.004	14	.000	13
Control	.001	20	.001	21

Table 8

Means for Observed Aggression and TV-Viewing Weekly Hours for Four Extreme Groups

Used in Family Interviews

(based on 4 sets of observations over a year)

	Low Aggression-Low TV			Low Aggression-High TV	
	Aggression	TV		Aggression	TV
Boys (N=6)	1.06	8.64	Boys (N=6)	1.16	47.53
Girls (N=4)	1.02	8.19	Girls (N=4)	1.07	34.86
Total (N=10)	1.04	8.45	Total (N=10)	1.12	42.46

	High Aggression-Low TV			High Aggression-High TV	
	Aggression	TV		Aggression	TV
Boys (N=6)	1.90	11.73	Boys (N=6)	2.27	48.74
Girls (N=4)	1.44	14.98	Girls (N=4)	1.74	60.64
Total (N=10)	1.71	13.03	Total (N=10)	2.06	53.50

APPENDIX

Appendix 1

Assessments of Rater Reliability in the Evaluation of the Spontaneous Play of Preschool Children*

Introduction: As part of an ongoing study of the effects of television-viewing upon the development of preschool children, we have trained numerous observers in the assessment of fourteen variables which reflect different dimensions of a child's behavior in a free-play situation. Naturally, we were concerned about the effectiveness of our training program in terms of the extent to which it developed appropriate skills and enabled observers to rate behavior in a reliable, consistent fashion. A major question which confronted us was, therefore, how to assess rater reliability. The most commonly used statistic for this purpose is the Pearson product moment correlation which has been employed with both ordinal and continuous data. However, as Robinson (1957) first noted, the Pearsonian correlation is inadequate as a measure of agreement because "it measures the degree to which the paired values of the two variables are proportional (when expressed as deviations from their means) rather than identical" (Robinson, 1957, 19). Cicchetti (1972) has extended this argument and comments that

> the Pearsonian product moment correlation measures the degree of similarity in ordering of rankings between two independent judges and as such does not focus specifically upon agreement. What is not taken into account is the discrepancy between raters on individual pairs of measurements. As a consequence, slight shifts in ordering of ranks in one observer relative to another can result in less agreement than between two other observers who may be much

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*Prepared by Robert Krueger, Ph.D. with the consultation of Dominic Cicchetti, farther apart on individual rankings but who, nevertheless, tend to put their rankings in the same order (Cicchetti, 1975, 367-368).

As our rating scales were ordinal, Cicchetti's critique was quite telling and we recognized the necessity for a different statistic to assess interrater agreement. One such statistic is weighted kappa, developed by Cohen (1968) and suitable only for ordinal data. Its standard error was corrected by Fleiss, Cohen and Everitt (1969). While kappa was originally developed for nominal data, it can be applied to ordinal data by using an ordered system of weights given by Cicchetti (1976). Consequently, we decided to employ kappa to evaluate interrater reliability.

Procedure: Two training sequences were conducted prior to each of two field observation periods. Each training sequence involved 4-6 meetings with observer-trainees. Each trainee was given a manual describing the variables to be rated and instructions regarding how to categorize live behavior in terms of the rating scale. Fourteen variables reflecting different dimensions of the free-play behavior of preschool children were rated: imaginativeness, concentration, positive affect, aggression, interaction with peers, interaction with adults, cooperation with peers, cooperation with adults, fearfulness, anger, sadness, fatigue, liveliness (activity), and elatedness. All variables except for those pertaining to interaction and cooperation were rated on a five-point scale ranging from "not at all", through "slightly", "moderately" and "very" to "extremely." The interaction and cooperation variables were rated from one to five only if relevant behavior was displayed. If no interactive or cooperative behavior took place for whatever reason, a "not applicable" category was added to the scoring of these four variables.

Prior to training sessions raters were given a set of sample protocols describing the behavior of different children. Raters were asked to attempt to rate each protocol in terms of the fourteen variables. At the initial training sessions, protocol ratings were discussed and any problems in applying the rating system were considered. As questions were raised, variations in rating practices became evident and were addressed by the training staff. Each training group was also shown films of children playing in settings quite similar to those in which they would be observing. As part of the training procedure, trainees were asked beforehand to construct protocols for selected children in the films and to rate their behavior. These ratings were then discussed with a view to any problems arising in the placing of observed behavior at given points on the scale. Prior to the last session in each training sequence, raters were given a new set of behavioral protocols and asked to rate these. Interrater reliabilities were computed on the basis of these ratings.

Methods of statistical analysis: Interrater reliability was assessed for each of the training sequences using the weighted *kappa* statistic (Cohen, 1968) with the standard error developed by Fleiss, Cohen, and Everitt (1969), and a weighting system developed by Cicchetti (1976). In computing *kappa* statistics, a Fortran computer program developed by Cicchetti, Aivano and Vitale (1976) was employed. Two types of weighting procedures were used. All variables except for those involving interaction and cooperation were treated as continuous-ordinal variables and the appropriate weights were employed. In a continuous-ordinal scale, the number of weights is determined by kappa, the number of ordinal points on the scale. The actual weights for any size K ordinal scale follow the formula given by Cicchetti (1972):

C-0

$$\text{(Linear weights)} = \frac{K-1}{K-1}\ ;\ \frac{K-2}{K-1}\ ;\ \frac{K-K}{K-1}$$

Thus, on our 5-point scale, four weights would be possible depending upon the amount of disagreement between a given pair of raters on a given variable:

Insert Table 1 about here

Since the interaction and cooperation variables differed from other variables in that they were only rated when certain behavior was present and not rated (or considered "not applicable") when it was absent, we felt a different way of assessing reliability should be employed. Following Cicchetti's (1976) discussion of dichotomous-ordinal scales, we decided to treat the interaction and cooperation variables as if they comprised such a scale since we felt that a disagreement regarding the presence or absence of interactive or cooperative behavior was a far more serious problem than a disagreement concerning the degree to which such behavior is displayed when each member of a pair of raters agrees that it is present. We had originally considered coding the "not applicable" category as blank for the purposes of computer analysis but two subsequent considerations mitigated against this procedure: (1) If the interactive or cooperative variables were coded as "not applicable", it became evident in the training sessions that this was because raters did not observe any behavior relevant to those variables (i.e., no such behavior occurred). However, coding this situation as blank implies that data were missing rather than that the child did not engage in a given type of behavior. Since such coding was misleading, we opted for a dichotomous ordinal weighting system; and (2) empirically, the "not applicable" category was quite commonly used. Treating the Cooperation and Interaction variables as if they were scored on a continuous ordinal scale led to considerable loss of information when "not applicable" was coded as blank and interrater reliability could not be assessed for these variables owing to so much missing data.

In a dichotomous ordinal scale, distances between category ratings are not equivalent as in a continuous ordinal scale owing to a category of "absence" and two or more categories of "presence". Consequently, one would wish to assign higher weights of agreement to pairs of ratings in which each member of the pair assumes "presence" of a given behavior than to pairs in which there is disagreement regarding presence or absence of the behavior in question. Accordingly, Cicchetti (1976) has developed a method of assigning dichotomous ordinal weights such that W (number of weights) = 2 (K-1). Thus the number of linear weights in a dichotomous ordinal scale is calculated to be

$$D\text{-}0 = \frac{W-1}{W-1}\,;\ \frac{W-2}{W-1}\,;\ \ldots\ \frac{W-W}{W-1}$$

This weighting system yields considerably more weightings than for a continuous ordinal scale.

Insert Table 2 about here

Having computed appropriate weights, weighted kappa is defined as "a chance-corrected index of rater agreement, when data are measured on an ordinal scale." (Cicchetti and Aivano, 1976, 7). The formula (developed by Cohen, 1968) is:

$$\text{Weighted Kappa} = \frac{PO-PC}{1-PC}$$

Where PO = the observed proportion of interrater agreement and PC = the proportion of interrater agreement expected on the basis of chance alone. Cicchetti and Aivano (1976, p. 7) note that in interpreting weighted kappa, a value of +1 indicates perfect-chance corrected agreement while a value of 0 indicates that rater agreement is exactly at chance levels. Negative values suggest that chance agreement exceeds observed agreement.

The statistical significance for weighted kappa is computed by dividing it by its standard error. This yields a Z-score which is normally distributed. Consequently, values exceeding $\pm$ 1.96 indicate chance-corrected rater agreement at the .05 level, those exceeding $\pm$ 2.57 at the .01 level, and so on (Cicchetti and Aivano, 1976, pp. 7-8).

Results and discussion:

Training Group I: In the first training sequence, 21 raters participated and interrater reliabilities were computed on the basis of variable scores for seven protocols. Each of the 21 raters scored the 7 protocols and each rater, therefore, had to be compared to the other 20 to obtain reliability data. Results were computed using the weighted kappa program devised by Cicchetti, Aivano and Vitale (1975). As this program is designed for a maximum of 15 raters, the training group was divided into three subgroups such that each observer could be compared to each other observer; i.e., raters 1-14 were compared as one group, raters 1-7 and 15-21 were compared as one group and raters 8-21 were compared as one group. This procedure entailed a certain amount of redundancy but assured that each rater pair would be examined. Results for each variable are presented in Tables 3-14.

As Tables 3-5 suggest, the first four variables were scored with considerable reliability by this group. The Imagination and Aggression variables seem to be easiest to score consistently, while Affect and Concentration are not quite as reliable.

Tables 6-8 indicate, again, differential reliability (and, by implication, ease of scoring) of the second four variables. Interaction and Cooperation with Peers seemed to be rather difficult to score reliably, whereas Interaction with Adults presented little trouble and Cooperation with Adults was intermediate in difficulty. One possible explanation for these findings is that protocols were constructed on the basis of observations of children in a free-play situation and it may not have been entirely clear to raters as to when a child was interacting or cooperating with his peers and when not. Involvement with an adult seems to have been much more obvious, although, again, whether or not this was a cooperative encounter seems to have been less easily discerned. As a consequence of these results, the scoring system and training procedure for the following training sequence were revised in an effort to clarify what these variables were intended to measure and how they should be scored.

Tables 9-11 present the results for the last six variables which are designed to assess different mood states, displayed during free play. The Fearful variable displays an interesting bimodal split in rater reliability in that it seems that raters either agree quite closely or disagree quite a bit without much agreement between these extremes. At present, there seems to be no good explanation for this phenomenon. The fatigued-variable was clearly the most easily and reliably assessed mood. Anger was intermediate in degree of reliability, while Sadness, Liveliness and Elatedness were more difficult to assess and permitted less reliable rating. As a result of these findings, we revised our training procedure for rating moods, including more elaborate instructions regarding what should and should not be rated. This revised training program was implemented in our second training sequence.

Training Sequence 2: As mentioned in the foregoing, observer-trainees in the first training sequence evinced some difficulty in agreeing upon how the interaction, cooperation and some of the mood variables should be rated. Consequently, we revised and expanded our definitions of these variables and specified more exactly what behaviors constituted the anchoring and intermediate points on the respective rating scales. These new definitions were used in the second training sequence (in preparation for our second field study).

In the second training group, sixteen raters originally participated and attended five training sessions. As previously, raters were given several practice protocols at the beginnning of the training sequence and were asked to rate these for the fourteen variables using our revised definitions of interaction, cooperation, and moods. These protocols were discussed during the training sessions and questions or problems in rating were explored. As some of the raters in this group had participated in the first training sequence and field study, there appeared to be fewer difficulties in the group's developing adequate rating procedures. Towards the end of the training sequence, observers were asked to score four protocols which were used to assess degree of inter-rater reliability via the weighted kappa statistic. In addition to these protocols, observers were also shown two short films of young children playing in a setting similar to the ones in which they would actually be observing. Observers were requested to rate the behavior of two specific children seen in the films (one in each film) and these ratings were also used to compute agreement statistics. Thus, each observer should have rated six "subjects" (i.e., four protocols and two films). However, one observer did not complete her ratings for the protocols and had to be omitted from the reliability study. Further, one observer rated the films only and one rated the protocols only (and, in fact, did little observing). Consequently, the ratings of these latter two observers were also excluded from computations of weighted kappa.

Tables 12-14 present interrater reliability results for the second training sequence, grouped by degrees of significance of weighted kappa computed on the basis of ratings made by fourteen observer-trainees who attended the training sessions.

Table 12 indicates that observers were able to agree quite well as to how Imaginativeness, Aggressions and Positive Affect should be assessed. Concentration was a bit more difficult to rate from the instructions given, although 63% of computed kappas were significant to at least the .10 level for this variable.

Table 13 suggests that Interaction and Cooperation continued to be difficult to evaluate, despite revised definitions and training procedures for these variables. Raters seemed to agree best upon how Interaction with Peers should be scored with 73% of these ratings reaching significance. However, Interaction with Adults and Cooperation with Peers and Adults all appeared to give trainees difficulty. These results indicate that different definitions of what constitutes interaction and cooperation are required for future training and field work.

Table 14 suggests a distinct improvement in interrater reliability in the assessment of moods. This presumably reflects improvements in our training procedure and refinements in variable definitions. Degrees of Fearfulness and Anger were both agreed upon by observers to a significant level in some 74% of comparisons. The extent to which a child displayed Sadness, Liveliness, or Elatedness, as evidenced in protocols or on film, was agreed upon to an even greater degree, yielding significant comparisons in 78%, 91% and 100% of cases, respectively.

Interestingly, the extent to which raters agreed upon how much fatigue a child displayed worsened somewhat in this training sequence. The fatigue variable yields a bi-modal distribution of weighted kappas, with almost 80% of the comparisons being significant at the .05 level or better and 22% being non-significant. It's unclear why fatigue should have proved more difficult to rate this time around.

Conclusions: The training program we have developed to instruct naive observers how to rate the behavior of preschool children appears quite effective with respect to some variables but not others. Most noticeably, observers seem to learn rapidly how to rate with considerable consistency the degree to which a young child displays imaginativeness, pleasure, aggression and a variety of mood and activity states in its play. However, the degree of concentration a child shows, as well as how much the child interacts or cooperates with its peers or adults, still seem problematic for raters to learn to assess reliably utilizing our current training scheme. Consequently, it seems advisable that some further thought be given to revising our current definitions of thes variables as well as our method of teaching observers how they should be rated.

Field Study October 1977:

In October 1977, data on the actual behavior of young children was collected by assigning the observers trained during sequence 1 at random into pairs. The members of pairs were alternated throughout the observation period which lasted three weeks. During this time, observer pairs were sent into the field to collect data on 126 children who comprised the subjects for our study on the effects of television on children's play behavior. Each child was observed twice during free play in a nursery school setting. Each observation period lasted ten minutes and the observations on each child were spaced at a random interval ranging from one day to two weeks. During each observation, each of the pair of observers independently recorded the child's behavior over the ten-minute segment, creating a protocol similar to those used during the training sequence. At the end of the observation period, each observer then independently rated the child on each of the fourteen behavior and mood variables. Thus, for each child, four ratings of each of fourteen variables were generated. Observers were given strict instructions not to discuss their ratings with one another in order to assure lack of interrater bias in ratings and guard against spuriously high levels of interrater agreement.

Interrater agreement was calculated utilizing the weighted kappa statistic. As each child was observed twice by each of two observers each time, ratings were divided into two sets: (1) rating 1 and (2) rating 2. Since observers were randomly assigned to rating pairs for each observation and as these pairs were also varied at random over the entire three-week data collection period, kappa was computed for each variable by randomly considering one rater as rater 1 and the other as rater 2. Consequently, kappa was computed for each of the two observations as if there were only two raters observing all the children on each occasion. One would therefore expect relatively low levels of agreement since observers worked completely independently and, moreover, were not consistently paired together. However, as Tables 15 and 16 demonstrate, the training program seems to have enabled observers, even with random pairing to agree with one another to an extraordinary degree. All kappa statistics were highly significant for all variables, even those which seemed problematic during the training sequences. The marked increase in interrater agreement during live observations, as measured by greatly reduced p of kappa levels, seems to be best explained by the fact that rating behavior and mood from written protocols and even films is considerably more difficult to perform reliably than rating actual behavior. Further, the training program, as currently constituted, does seem capable of providing adequate observational and rating skills to relatively naive observers and enabling them to rate the behavior and mood of young children in a live setting with considerable reliability.

Conclusions: The traiing program we have developed to instruct naive observers how to rate the behavior of preschool children appears quite effective in enabling raters to achieve relatively high levels of inter-observer agreement in evaluating live behavior. While some variables appeared more difficult to rate reliably during our training sessions (e.g., concentration, interaction and cooperation with peers and adults), raters seemed to be able to agree quite well on these when actually observing a child at play. It might be argued that variables which were less reliably agreed upon during training sessions should be scrutinized further and, perhaps, more carefully defined. However, at present our program clearly accomplishes its objectives.

Table 1

Linear weights for a 5-point continuous ordinal rating scale

	Complete Agreement	1 Scale point apart	2 Scale points apart	3 Scale points apart	4 Scale points apart
Weight	1	.75	.50	.25	0

TABLE 2

Linear agreement weights for a 6-point dichotomous-ordinal rating scale

Value of Weight	Complete Agreement	1 Scale Point apart		2 Scale points apart		3 Scale points apart		4 Scale points apart		5 Scale points apart	
		Absence-Presence Confusion									
		No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
10	1	.89	.78	.67	.56	.44	.33	.22	.11	-	0

Table 3

Raters 1-14 compared on 1st four variables, grouped by P of Kappa values

Variable	$P < .01$	$.01 < P < .05$	$.05 < P < .10$	$P > .10$
Imagination	12	34	18	27
Affect	19	25	6	41
Concentration	10	29	9	43
Aggression	84	1	6	0

Table 4

Raters 1-7 and 15-21 compared on 1st four variables, grouped by P of kappa values

Variable				
Imagination	13	48	22	8
Affect	25	26	7	33
Concentration	21	27	13	30
Aggression	91	0	0	0

Table 5

Raters 8-21 compared on 1st four variables, grouped by P of kappa values

Variable				
Imagination	46	28	5	12
Affect	50	23	7	11
Concentration	17	24	21	29
Aggression	82	5	4	0

Table 6

Raters 1-14 compared on 2nd four variables, grouped by P of kappa values

Variable				
Interact-Peers	6	12	20	53
Interact-Adults	60	10	7	1
Cooperation-Peers	31	4	7	49
Cooperation-Adults	17	20	10	44

Table 7

Raters 1-7 and 15-21 compared on 2nd four variables, grouped by P of kappa values

Variable	$P < .01$	$.01 < P < .05$	$.05 < P < .10$	$P > .10$
Interact-Peers	3	12	17	59
Interact-Adults	52	18	20	1
Cooperation-Peers	27	16	8	40
Cooperation-Adults	29	33	7	22

Table 8

Raters 8-21 compared on 2nd four variables, grouped by P of kappa values

Variable				
Interact-Peers	4	11	16	60
Interact-Adults	52	13	15	1
Cooperation-Peers	8	3	7	73
Cooperation-Adults	14	29	8	40

Table 9

Raters 1-14 compared on last six variables, grouped by P of kappa

Variable				
Fearful	55	0	0	36
Angry	15	39	11	26
Sad	16	5	27	43
Fatigued	76	0	12	3
Lively	13	20	10	48
Elated	3	25	22	41

Table 10

Raters 1-7 and 8-21 compared on last six variables, grouped by P of kappa

Variable				
Fearful	66	0	1	24
Angry	11	23	13	44
Sad	32	3	29	27
Fatigued	83	0	0	8
Lifely	15	17	11	48
Elated	10	26	17	38

Table 11

Raters 8-21 compared on last six variables, grouped by P of kappa

Variable	$P < .01$	.01 $P < .05$	.05 $P < .10$	$P > .10$
Fearful	53	0	1	37
Angry	3	21	17	50
Sad	15	10	16	50
Fatigued	72	0	8	11
Lively	20	31	16	24
Elated	10	28	21	32

Table 12

Interrater reliability, training sequence 2, 1st four variables, grouped by degree of significance of weighted kappa

Variable				
Imagination	7	50	21	13
Affect	45	33	3	0
Concentration	3	39	15	34
Aggression	39	39	1	2

Table 13

Interrater reliability, training sequence 2, 2nd four variables, grouped by significance of weighted kappa

Variable				
Interaction/Peers	15	30	21	25
Interaction/Adults	9	17	12	53
Cooperation/Peers	14	25	14	38
Cooperation Adults	11	27	12	41

Table 14

Interrater reliability, training sequence 2, last six variables, grouped by significance of weighted kappa

Variable				
Fear	55	13	0	23
Anger	1	63	4	23
Sadness	10	45	23	13
Fatigue	63	8	0	20
Liveliness	47	21	15	8
Elation	81	10	0	0

Table 15

(First and second raters compared for first behavioral rating, Oct., 1977, field study)

Imagination	.524	.00001
Affect	.397	.00001
Concentration	.407	.00001
Aggression	.722	.00001
Interaction/Peers	.610	.00001
Interaction/Adults	.690	.00001
Cooperation/Peers	.516	.00001
Cooperation/Adults	.464	.00001
Fear	.210	.004
Anger	.346	.00001
Sadness	.303	.00002
Fatigue	.444	.00001
Liveliness	.553	.00001
Elatedness	.483	.00001

Table 16

(First and second raters compared for second behavioral rating, Oct., 1977, field study)

Variable	Kappa	p of Kappa
Imagination	.438	.00001
Affect	.432	.00001
Concentration	.482	.00001
Aggression	.652	.00001
Interaction/Peers	.525	.00001
Interaction/Adults	.643	.00001
Cooperation/Peers	.419	.00001
Cooperation/Adults	.383	.00001
Fear	.337	.00001
Anger	.517	.00001
Sadness	.262	.00025
Fatigue	.455	.00001
Liveliness	.487	.00001
Elated	.467	.00001

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Chronological Summary of Project Activities - September 1977-June 1978

September - 1977

1. Parent Booster Session for training of all three groups. Discussion about reaction to training materials.

2. Observer Training Sessions for new observers. There were three training sessions using practice protocols and films. Training procedures are in appendix.

October 3 - October 16, 1977   Observation Period III

1. Trained observers to observe children in 49 nursery schools and kindergartens for two 10-minute periods.

October 3 - October 9, 1977 - Children's TV Viewing Logging Period III
October 10 - October 16, 1977 - Children's TV Viewing Logging Period III

1. Logs again kept by parents for 2 weeks. Parents recording children's TV programs for 2-week period.

2. Scoring of television logs, coding data begins. Language scoring of play observations continues.

November - December 1977 - Parents were sent supplementary materials appropriate for each training group.

December 1977 - January 1978 - Observer training sessions. Observers were again trained using practice protocols and films.

January 30, 1978 - February 12, 1978   Observation Period IV

1. Trained observers again observed children in nursery schools and kindergartens for two 10-minute periods.

January 30 - February 5, 1978 - Children's TV Viewing Logging Period IV
February 6 - February 12, 1978 - Children's TV Viewing Logging Period IV

1. Logs again kept by parents for 2 weeks. Parents recording children's TV programs for 2-week period. Coding of logs continues.

February - April, 1978 - Completed entering of all data for computer. Key cards punched.

April, 1978

1. Statistical procedures carried out. Data analyzed for all 4 probes of the study.

2. Preparation of Parent Interview and Home Observation Schedule. Training of the staff to conduct interviews in the home. A training procedure was developed.

3. Recognition test was finalized and training procedure form for administration was prepared.

May, 1978

1. Interviews carried out in 40 homes with extremes in aggression and TV viewing as participants. TV Character Recognition Test given.
2. Mailed sections of training manual to parents to make complete copies.
3. Parents invited for session to receive results of year's study.

June, 1978

1. Analysis of family interview data and recognition test data completed.
2. Progress Report written and prepared for NSF Committee. Summary report also prepared for dissemination.
3. The staff has been recruiting new subjects for the continuation proposal. This entailed visits to numerous nursery schools in the area including meetings with participants, teachers and parents.
4. Transfer of data from present system to SPSS.

Weekly - Staff meetings continued to be held to keep staff informed of each other's activities. Periodic statistical consultations were held concerning data analyses.

During the 18 months of the project there was continual correspondence to nursery school directors and to parents keeping them informed about each stage of the study.

Payments were sent to parents in March.

NSF-TV Study
May 1978

Instructions - Parent Interview

1. Call the day of appointment.
2. Identify self when you come to home.
3. Establish rapport - nice to see you in person
   appreciate your allowing us to come here
   trying to find out more details about day-to-day life and your life style
   no obligation to answer any question
   few minutes to interview child and play a "game"

I. Look around house (use clipboard for interview)
form opinions about house

(1) 1 = lowest
5 = spotless (plastic on furniture)

(2) 1 = no toys
5 = many toys visible

(3) 1 = no books
5 = abundance

(4) 1 = no musical instruments, radio
5 = many

(5) 1 = no weapons
5 = many weapons

II. Family Life Style

1. Ask questions, record - who child shares room with

2. Daily Routines - child and parents separate
Some families have special routines, etc. Let mother talk on and record as information comes forth.

n. Child put to bed - ask in a general way - "families have different patterns - no correct way"
Be sure not to be judgmental. Try not to make parent defensive.

3. Weekend Routines - get full description of what happens on weekend--each parent.
Who controls TV - try and get information - this is in general - not just weekdays.

III. General Family Life - we want to get some information about some things you do as a family. Preface each item with a sentence.

IV. Family Stress - 1. Families may experience some stressful situations. Have there been any recent major illnesses or any deaths?

2. Sometimes there are arguments. Are there ever any between your children? Can you tell me about them?

3. Each family has their own form of discipline. Can you give me some examples - recent incidents - last time you had to discipline.

V. We've covered quite a bit today. Is there anything more you would like to discuss or tell me.

Conclusion

Please thank parent. Give her the check, get the signed receipt. Then test the child. Mother may watch or help if needed.

NSF-TV Study
May 1978

Parent Interview
and
Home Observation Schedule

Private home______________ Apartment____________ Child's Code #:_____________

Location of child during interview_____________ Date of interview________________

Location of interview in home__________________ Parent (M,F)________________________

No. of TV sets & locations______________________ Interviewer__________________________

____

Is TV on? No 1 Yes 2

I. Home observation

1. Home rating
   1 2 3 4 5
2. Toys & Games
   1 2 3 4 5
3. Books & Magazines
   1 2 3 4 5
4. Musical instruments & stereos
   1 2 3 4 5
5. Rifle cabinet or other indications of weapons or hunting
   1 2 3 4 5

II. Family Life Style

1. Members of family living in house (including grandparents, relatives, boarders)

   ____

   Number of rooms ______________

   Child have own room? No 1 Yes 2

2. Daily Routines

a. Wakeup time - weekday ______________

b. Wakeup time - weekend ______________

c. Mother's wakeup time- weekday____________ weekend______________

d. Father's wakeup time- weekday____________ weekend______________

e. Do children watch TV regularly in early weekday AM__________

weekend AM__________

f. Eating patterns

Family eats together (weekday) 1 meal_____ 2 meals_____ All meals_____

(weekend) 1 meal_____ 2 meals_____ All meals_____

Children or family watch TV while eating

1	2	3	4	5
never				always

g. Dressing pattern

Who dresses child	1	2	3
	self	some help	totally helped

Dressed by M, F, Sibling, Other

h. Who takes child to school?__________________________

i. Who brings child home __________________________

j. No. of hours child is in school____________________

k. After school activities-typical day__________________________

____

l. Supper-time ______________

m. Bedtime ________________

n. Describe how child is put to bed, e.g. regular routine vs. irregular, how child is put to bed. Is there a bed-time ritual? (Do not ask leading questions but look for reading, story-telling).

o. Child's sleeping pattern: (often-at least 1/mo or 1 every 2-3 weeks)

Sleep through night?	never	sometimes	often
Nightmares?	never	sometimes	often

Hours of night sleep____________________

Daytime Nap? No Yes

Bedwetting?	never	sometimes	often
Sleep walking	never	sometimes	often
Insomnia	never	sometimes	often

p. Child come into parents' bed?	never	sometimes	often
q. Does the child have visiting friends? (in the daytime)	never	sometimes	often
r. Does the child visit other children? (in the daytime)	never	sometimes	often

3. Weekend Routines

Mother's role with child

Father's role with child

Joint TV-watching on weekend

(F-child)	1 never	2	3	4	5 regularly
(M-child)	1 never	2	3	4	5 regularly

Family-viewing style in general
(Get narrative account-who controls TV? Are there fights over TV? How are these resolved?)

III. Family Activities (parents with child)

	never	occasionally	sometimes	often	regularly
1. Visiting relatives together	1	2	3	4	5
2. Shopping	1	2	3	4	5
3. Park, picnics, zoo, outings	1	2	3	4	5
4. Museums, galleries, concerts	1	2	3	4	5
5. Movies	1	2	3	4	5

Get samples of recent movies seen with child

1.
2.
3.
4.
5.

	never	occasionally	sometimes	often	regularly
6. Sports	1	2	3	4	5

(Examples - spectator or participant?)

1.
2.
3.

7. Family TV viewing with child

Samples of regularly seen shows

1.
2.
3.
4.

Specials past 6 months

1.
2.
3.

8. Give examples of your favorite TV shows and movies

1.
2.
3.

Give examples of your husband's favorite TV shows and movies

1.
2.
3.

9. Hobbies or interests of mother:

Hobbies or interests of father:

IV. Family Stress Situations

1. Major illnesses or bereavements?

Children

Parents

Grandparents or relatives

2. Arguments

Between children	1 never	2	3	4	5 very frequent
Physical vs. verbal	1 mostly angry comments	2	3	4	5 mostly blows and hitting

Any parental arguments witnessed by children?

Parents ever disagree about child-rearing?

3. Discipline and Punishment

1. Examples of discipline

   Father:

   Mother:

2. Type of discipline

   Restriction

   Psychological

   Scolding

   Physical

3. Reward pattern

4. Is child underactive — normally active — hyperactive

Is child	underactive 1	2	normally active 3	4	hyperactive 5

5. Child's problems:

a) Physical aches & pains	1	2	3	4	5
b) Poor habits, e.g. toilet, messiness, carelessness	1	2	3	4	5
c) Fighting, noisy, stubbornness, possessiveness	1	2	3	4	5
d) Worries, fears, doubts,	1	2	3	4	5
e) Shyness, seclusive, solitary, passive	1	2	3	4	5

6. Child's strengths (in addition to absence of above)

a) Good humored, laughing smiling	1	2	3	4	5
b) Enjoyment of physical adventures, running, jumping sports	1	2	3	4	5
c) Special talents, e.g. music (singing) drawing, reciting, pre-reading, construction, story-telling	1	2	3	4	5
d) Sociability - leadership, cooperation	1	2	3	4	5

V. Open-ended expression-parent's interests, view of life-style, role of TV, importance of school, work, affection, discipline, religious values or ethics, self-sufficiency.

Television Character Recognition Test

Rules of administration: Preschool children

1. This individual test should be given in a quiet place away from others who may interfere or be taking the test at a later time.

2. The examiner should be pleasant and encouraging.

3. To motivate the subject to do his best, praise should be given generously. Such comments as the following have been found effective: "Good! You are doing well," etc. However, praise can be overdone. Many individuals know when they are beyond their depth and are not deceived by unearned praise. The sensitive examiner will soon learn the optimal amount of encouragement to elicit maximum performance.

4. Do not indicate whether or not a response is correct. If an incorrect response is made, encouragement should be given. If a subject says, "Did I get that one right?" say "That was a good answer".

5. It is not permissible to show the subject the printed stimulus names.

6. Stimulus names may be pronounced aloud more than once by the examiner. Do not introduce any stimulus words not on the score sheet. When a character's name is given, do not mention the name of the program it is from.

7. The subject may take any reasonable amount of time per item to make his selection. However, after approximately one minute, he should be encouraged to make a choice. Say: "Try one. Point to one of them". Always secure a response. Do not record "no response" or "don't know". There is no penalty for guessing on this test.

8. Some of the subjects, especially young ones, may point to one corner on plate after plate. It is therefore necessary to repeat frequently, "Be sure to look carefully at all four pictures." If the child continues to do this the examiner should point to picture No. 1 saying, "Look at this one"; then picture No. 2, saying "and this one"; then to picture No. 3 saying "and this one"; then to picture No. 4 saying "and this one."

9. When a subject spontaneously changes his choice, record the final response.

10. For subjects who use the pointing response, precede each stimulus word when starting the test with one of the following: "Put your finger on ________." "Can you find __________?" "Show me __________." "Point to ______________." "Where is ____________"?

11. When a name is given in quotation marks it indicates the name of a television program. Precede the name with "Can you find someone from the television program called __________?" "Point to someone from the television show called __________."

12. Two passes are to be made through the test book. After completing the book once turn to plate 1 and continue asking the names on page 2 of the score sheet.

INTRODUCING THE TEST

Introduce the test by saying:
"I want to play a television picture game with you"
Turn to the example and say:
"See all the pictures on this page."
Indicate this by pointing to each in turn.
"I will say the name of somebody on this page and then I want you to put your finger on the picture of the person or television show I have said. Let us try one. Put your finger on ________."
When a subject makes the desired response, turn to the next page and say:
"Fine! Now I am going to show you some other pictures. Each time I say a name, you find the picture of that person. When you are not sure you know the person I want you to look carefully at all of the pictures anyway and choose the one you think is right. Point to ________."

With very young children, additional trial series may be necessary to establish the desired pointing behavior. In such cases, ask other names on the example page.

With very immature subjects, the examiner will need to establish the pointing response by saying "Put your finger on ________", and at the same time placing the child's finger on the correct picture. After a few trials the tester may take the lead by pointing and then encouraging the subject to do likewise. The length of time required to establish the desired pointing behavior will vary from child to child. The example plate may be repeated. However, if the desired response has not been established after a number of trials, the test should be discontinued.

TELEVISION CHARACTER RECOGNITION TEST

PASS ONE

Plate No.	Name	Key	Resp.
1.	Yosemite Sam	(1)	
2.	Hardy Boys	(3)	
3.	John Boy	(1)	
4.	Lamont	(3)	
5.	Woody	(1)	
6.	Police Woman	(2)	
7.	Tom	(3)	
8.	Aquaman	(2)	
9.	Herman	(1)	
10.	"Magic Garden"	(3)	
11.	Kotter	(2)	
12.	"Emergency"	(2)	
13.	Scooby Doo	(4)	
14.	Alice and Raymond	(2)	
15.	"Tom and Jerry"	(1)	
16.	Sandy	(4)	
17.	Bill	(2)	
18.	Pepper	(4)	
19.	The Partridge Family	(1)	
20.	Wonder Woman	(1)	
21.	Oscar	(2)	
22.	"Little House on the Prairie"	(4)	
23.	Starsky	(3)	
24.	Alfalfa	(4)	
25.	John Chancellor	(3)	
26.	"Caroscolendas"	(4)	

PASS TWO

Plate No.	Name	Key	Resp.
1.	Mr. Magoo	(2)	
2.	Marlin	(1)	
3.	"Gong Show"	(4)	
4.	David Hartman	(2)	
5.	Big Bird	(3)	
6.	Mr. Spock	(3)	
7.	Gene	(1)	
8.	Batman	(1)	
9.	"Animals, Animals, Animals"	(2)	
10.	Viki	(2)	
11.	Bob	(4)	
12.	Barney	(1)	
13.	Jabberjaw	(2)	
14.	Donny and Marie	(3)	
15.	Wilma	(2)	
16.	Alice	(1)	
17.	The Fonz	(3)	
18.	Bionic Woman	(3)	
19.	The Stevens' Family	(4)	
20.	Nancy Drew	(3)	
21.	Mister Rogers	(3)	
22.	Barney	(1)	
23.	Steve	(4)	
24.	Porky	(3)	
25.	Chuck Scarborough	(4)	
26.	"Charlie's Angels"	(2)	

SCHOOLS - FALL 1977

28
Alice Peck School
Hillfield Road
Hamden, Conn.
Principal: Ms. Josephine Bosch
Telephone: 288-7967

48
Beecher School
100 Jewell Street
New Haven, Conn.
Principal: Dr. Yale Chessil
Telephone: 562-0151

16
Beecher School, North
Beecher Road
Woodbridge, Conn.
Principal: John Mulrain
Telephone: 389-2195

29
Bethesda Nursery School
305 St. Ronan
New Haven, Conn.
Director: Ms. Ellen Schowalter
Telephone: 865-4959

43
Bumble Bee Nursery School
486 Clintonville Rd.
North Haven, Conn.
Director: Ms. Claire P. Voos
Telephone: 239-3519

1
Calvin Hill Day Care Center
150 Highland Street
New Haven, Conn. 06511
Director: Carla Horwitz
Telephone: 436-0722

46
Center School
76 South Ave.
New Canaan, Conn.
Principal: Dr. Stephen E. Rubin
Telephone: 966-9774

31
Church Street School
95 Church Street
Hamden, Conn.
Principal: Andy Pellico
Telephone: 248-5890

38
Community Nursery School
Sachem's Head Rd.
Guilford, Conn.
Director: Beth Cronan
Telephone: 453-5500

42
Cox Elementary School
Three Mile Course
Guilford, Conn. 06437
Principal: Robert Pleasure
Telephone: 453-5291

11
Davis Street School
35 Davis Street
New Haven, Conn.
Principal: Francis Moriarty
Telephone: 562-0151

2
Divinity School Nursery
350 Canner Street
New Haven, Conn.
Director: Bonnie Sherman
Telephone: 562-4227

45
Dixwell Day Care Center
197 Dixwell Ave.
New Haven, Conn.
Head Teacher: Geraldine Cooper
Telephone: 787-1002

26
Dunbar Hill School
315 Lane
Hamden, Conn.
Principal: George Esposito
Telephone: 288-7955

25	East Rock School 133 Nash St. New Haven, Conn.	Principal: Marco Palmieri Telephone: 562-0151
10	Edgewood School 797 Edgewood New Haven, Conn.	Principal: Gerald Kelly Telephone: 562-0151
27	Ezra Academy Rimmon Road Woodbridge, Conn.	Principal: Rabbi Robert Marcus Telephone: 389-5500
9	Foote School 50 Loomis Place New Haven, Conn.	Principal: Frank Perrine Telephone: 777-3464
3	Gesell Nursery School 314 Prospect Street New Haven, Conn.	Director: Barbara Steineu Telephone: 777-1067
41	Greater Hartford Community Lab School 61 Woodland Hartford, Conn.	Director (Acting): Betty Heiman Telephone: 549-4200 Ext. 286
33	Gan Heyeled Nursery School Rimmon Road Woodbridge, Conn.	Co-Directors: Susan Shapiro & Joya Marks Telephone: 389-2111
39	Hamden Community Child Care Center 2901 Dixwell Avenue Hamden, Conn.	Director: Caltha Crowe Telephone: 248-2083
23	Hamden Hall Country Day School 1108 Whitney Ave. Hamden, Conn.	Headmaster: Richard J. Dolven Telephone: 865-6158
19	Hamden/New Haven Cooperative Education Center 1450 Whitney Ave. Hamden, Conn.	Project Coordinator: Audrey Tiani Telephone: 288-7926
49	Hamden Nursery School 185 Eramo Terrace Hamden, Conn.	Principal: Ms. Gorman Telephone: 248-6857
37	Harris and Tucker Day Care 412 Newhall Hamden, Conn.	Co-Directors: Patricia Harris & Margaret Tucker Telephone: 787-5087
15	Helen Street School 285 Helen Street Hamden, Conn.	Principal: Mrs. Marie C. Oddi Telephone: 248-3637

14 High Plains School
525 Orange Center Road
Orange, Conn.
Principal: Robert M. Valuk
Telephone: 795-9777

20 Hooker School
180 Canner St.
New Haven, Conn.
Principal: Ms. Ann Dwyer
Telephone: 562-0151

40 Kiddy Korner
2730 Main St.
Rocky Hill, Conn.
Director: Mrs. Jennie Love
Telephone: 563-0663

35 Leila Day Nurseries, Inc.
100 Cold Spring
New Haven, Conn.
Director: Judy Mertz
Telephone: 624-1374

6 Linden Nursery School
605 Benham
Hamden, Conn.
Director: Evelyn DeRosa
Telephone: 288-4580

32 Montessori
321 Ridge Road
Hamden, Conn.
Co-Directors: Mrs. Margaret Camp &
Josephine Bill
Telephone: 288-2116

7 Mother Goose Nursery School
44 Lucy Street
Woodbridge, Conn. 06525
Director: Jan Parker
Telephone: 389-4373

44 New Hall School
590 Newhall
New Haven, Conn.
Principal: Carmen Vegliante
Telephone: 562-2462

21 Roger Sherman School
765 Elm Street
New Haven, Conn.
Principal: James Mills
Telephone: 562-0151

13 Ridge Hill School
120 Carew Rd.
Hamden, Conn.
Principal: Richard Palleria
Telephone: 288-6485

24 Ridge Road School
Ridge Road
North Haven, Conn.
Principal: William Tedeschi
Telephone: 248-4050

30 Sacred Heart
208 Columbus Ave.
New Haven, Conn.
Principal: Sister Maryann Malesics
Telephone: 777-8137

22 St. Thomas Day School
830 Whitney Ave.
New Haven, Conn.
Principal: Caroline Zinsser
Telephone: 776-2123

18 Shepherd Glen School
Skiff St. Ext.
Hamden, Conn.
Principal: Frank Pinto
Telephone: 288-1210

47 Spring Glen School
1908 Whitney Ave.
Hamden, Conn.
Principal: Ms. Evelyn Erwin
Telephone: 288-1684

4 Sunshine and Lollipops
20 Augur Street
Hamden, Conn.
Director: Elaine Gonsalves
Telephone: 562-5840

17 Turkey Hill School
441 Turkey Hill Road
Orange, Conn.
Principal: Ms. Dorothy Berger
Telephone: 795-3505

8 Westville Community Nursery School
34 Harrison Street
New Haven, Conn.
Director: Tobi Bartlett
Telephone: 387-1479

34 West Woods School
350 West Todd
Hamden, Conn.
Principal: Edward King
Telephone: 248-3221

5 Whitney Nursery School
730 Whitney Avenue
New Haven, Conn.
Director: Flora DeGregorio
Telephone: 624-6922

12 Wintergreen School
Wintergreen Avenue
Hamden, Conn.
Praincipal: Raymond Avery
Telephone: 288-6500

36 YWCA Day Care
48 Howe
New Haven, Conn.
Director: Jean Sanderson
Telephone: 624-7535

Minutes - 9/26/77

Parent Group I - Imagination

About 25 parents attended this session. Its purpose was to review the materials used by the parents in their imaginative training exercises. A film was shown at the beginning of the meeting called "Setting the Stage for Learning" (NYU Film Library). Dr. Jerome Singer introduced the film, welcomed the parents, and thanked them for their past and present cooperation in log-keeping and in responding to all our forms. The film focused on play--the need for some teacher involvement to get a game started via stories, photos, verbal suggestions, props, and demonstrations. Dr. Singer pointed out various techniques used during the film.

After the film, parents were asked for their reactions to the film. Parents commented on their use of the materials the project had supplied. The comments were highly favorable--and indeed two parents spoke about how their other children (not in the study) also had benefited. There were no negative feelings expressed concerning the materials. Four mothers made little "speeches" about the value of their training and the use made of the play suggestions. One parent asked for help in dealing with her child's sibling rivalry. Another couple asked for help in handling a bright, imaginative kindergarten boy. Parents exchanged comments--and left with renewed interest. Coffee was served.

Minutes September 28, 1977

J. Singer: Introductory remarks. Thanks everyone for coming.

Film shown. Cognition - dealing with language development.

Cognitive development
Piagetian concept, volume, space, conservation, transformation of objects. Difficulty children have in grasping these ideas. Parents help by explaining to the children.

Go into the situation. Help the child in moving to the next stage of cognitive development. Language development. Next step. Reading.
Stressing for parents to help the child in going from one stage to the next.

Feedback from parents. Materials sent and how do they react.
Have the materials sent been helpful.

Parent: Younger child, better able to concentrate, listens more closely. Difference between male and female?

Dr. JS: Differences between male and female. Difference in girls brains. Girls will pick up language better, girls brains less specialized than boys, can do more language with right side of brain. Boys, left side language; visual forms right side. More of their brains used for language in earlier years.
Girls--social factors also. Girls trained to be quieter, more attentive, boys rough, touch and rambuncious.

Parent: Two girls, one more active than the other.

Dr. JS: Constitutional differences.

Parent: About material. First handouts too simple for the children. Bringing up kids spend time thinking about it. Most try to spend as much time as we can.
1. Materials too late 2. No increment over what they were already doing.

Parents: (2) Things we already knew about. Helpful, made me focus in on some things and think about things more. Made more of a logical sequence.

Dr. JS: Expresses one of our concerns. Parents want to encourage but may not have that degree of organization. We add a little bit extra.

Parents: Made me more aware of things in my environment that I could use, but wasn't aware of. Found things in kitchen and used form suggestions in the materials.

Dr. JS: Talked to woman who wrote a book dealing with practical suggestions.
Ex: child's room should be painted white, wash off things from the walls. Things like that would make a difference.

Parent: Attention span. Is it useful to try and help child increase attention span or is that frustrating. Ex: try and sit still and listen to the story.

Dr.JS: Good if doesn't deteriorate into a fight.

Dr. DS: Make it exciting and not an aversive stimulus. Don't try and finish story. Make it into a cliff hanger. Stretch out next day another minute. Example: Listen in tomorrow. Have child have an expectation. Where the parent still controls the time. You stop before he starts to finish. Let him be in control but you subtly control it.

Parent: Found child didn't sit. Let the child come back to her. Didn't press. Let her come to me. Finding better results. Feel like not doing enough sometime.

Dr. JS: That's fine. Don't press too much or will be more of a negative experience.

Parents: Takes stories and makes up her own.

Dr. JS: Your instincts are good. Sometimes afraid of failure. Sometimes will practice privately. May feel they've lost your approval. They set own pace and they'll come when they're ready.

Parent: Curious to know what you've found out about the TV part.

Dr. JS: Getting some information. No solid conclusions. Would rather wait until June for our findings. Share other experience from other groups. Feel responsibility to you. Are impressed with honesty of parents filling out. Results very close to Neilsen ratings. Children are watching a great deal of TV. Looks at TV and see how we can help with language development.

Parent: Put kids in front of education TV shows very early. Now bored with it and then go to Brady Bunch. Haven't been putting TV on like I used to. Offended by one TV show. Parent comes home frustrated, yelling and hitting the child and told her to go to her room. Felt it would have affects on the child.

Dr. JS: Good that you were there.

Parent: Child didn't want to talk about it.

Dr. JS: Something you really can't control.

Question and Answer about hand dominance: Do let the child go with natural preference.

Parent: By what age does a child establish dominance.

Dr. DS: Usually by age 7 a lot of children will still switch. 5 - 7 not early.

Parent: Isn't one hemisphere dominant.

Drs. D & JS: Not necessarily.

Dr. DS: Some room for growth. Child still switching and changing. Some will favor left for one activity and right for other activities. Keep a much more open view about it. Some children establish dominance by 3 others by 7. Look at it more as a continuum and not a set rule. Rules about handedness may create a problem.

Parent: Bombarded by Sesame Street teaching numbers. Violence illustrated on TV, Brady Bunch, Partridge Family. Child will say other kids watch shows feel like a dictator. How to handle and rules in the house.

Dr. JS: Problem with Sesame. Throw things at you to hold the child's attention. Almost hypnotize child. Done by rapid movements. Not convinced best way to do it. Children do learn to watch the screen. May not learn. Materials presented too rapidly. Parents can teach more about letters and numbers. If you are uncomfortable don't press the child. Parents have to be the deciding factor of what the child watches initially. Up to about age 8 - 9 parent determining force of what is watched. You decide on wha is and kids will accept the fact that this is how our house runs. Should have confidence on your own convictions. When kids get older much harder to control.

Dr. DS: You can provide your child with other experiences. Not advocating banning TV. That's your decision and should asset your authority as a parent and not be intimidated by them.

Parent: Any parents who don't have TV?

Dr. JS: About 4 in our study.

Cautions about how observations will be unobtrusive and 2 more log periods.

Parent Meeting: Group III September 29, 1977

Dr. Singer spoke of their meetings in Europe. Good idea of what's happening concerning TV.

Highlight critical question.
1. TV new - never existed before in the world. Immediacy of events, range of exposure. Most people lived in small communities. Literacy - knowledge of the world around him. Narrow experience. TV major technological advance.

2. Effects on children:
People talking directly to children - from varied cultures and backgrounds. Potential risks and dangers. Example: 1st concern. Child watching 3 hours a day. Spending less time reading. National average in viewing increasing every year. Substitutes for basic reading skill. Child may not be doing those exercises. TV fills the gap. Characteristics of TV set. Problems for the child.

1. Presents figures in a miniature way
2. Now part of the household
3. Events take place much more rapidly.
4. Events foreshortened, children don't make the connection
5. Rapid sequences and cutaway rapidly between scenes.

Hard to avoid looking at TV set. TV produces orienting reflexes. Children may be more vulnerable to the effect. Other countries slower pace. We may find it boring, longer segments. Sesame Street hold child's attention by many short scenes. Violence on TV-- ABC still highest in violence. Is the violence of consequence?

1. Research fairly convincing. Kids become more active and more violent.
2. People may exaggerate, or overestimate the dangers in their environment.
3. People begin to take violence for granted. OK for the good guys to shoot the bad guys - not the way our country is run.

Parent: Find reality worse - bad guys never get punished. The ideal on TV may be better.
Dr. JS: May be true - but may get a distorted impression. New York News - emphasis on Son of Sam.

Questions about specific shows.

Dr. DS: Research project - monitoring the husbands TV viewing. Blind procedure. Husbands to watch certain shows; prosicial, violent, and random. Given logs to note programs viewed and en rating scale. Ex: way he treated her and the children. Prosicial viewing - increase in good behavior either way. Random - behavior remained the same. Shows power of a positive model on people. Constructive acts. People who follow the aggressive model tend to be aggressive. Don't know if the effects of the behavior would last.

Dr. JS: Child will imitate a good deal of what they see on TV. Kids can't tell the difference between the good guys and bad buys. TV is a powerful medium with effects that can't be predicted. Parents have to come back into the scene and can't allow TV to control the house. You have to decide how much TV your kids will watch. Not something that should be critical developmental factor in your child's life. Talks about Plug-In-Drug-give the extreme position. Parents are the dominant people and can't let the medium override your authority in the house.

stion and Answer period.

Discusses the right to read program.
Serious mistake to blame all the violence in the country on TV. However still an ecological factor we have to take into consideration.

Training of Observers

In order to collect behavioral samples of subjects, we trained sixteen assistants in observational techniques. The observers were selected from among students who answered ads in a local newspaper. Observers were generally psychology majors, both graduate and undergraduate, or members of the New Haven or Bridgeport communities who had some background in developmental psychology, or who had been former elementary or nursery school teachers. Training took place over a period of three weeks before the pre-testing and observations began.

Observers were each provided with sixteen typed protocols which were behavior samples collected in an earlier study. A set of instructions concerning ratings (see the appendix) was included with each set of protocols. Observers were blind to the hypotheses of the study, and were given only such information about procedures that could in no way influence direction of results. The Trainers were the two co-directors of the project and a research assistant who had trained observers on a previous study and who was familiar with our techniques.

The group met once a week for two hours over the three week period. At these sessions, each observer called out the rating he or she had given a child on each of the fourteen variables described earlier. Each variable was discussed vis-à-vis the instruction booklet, and we attempted to give further examples than those offered in the instruction booklet. Observers had ample opportunity to discuss reasons for their ratings, and we pointed out our reasons for our rating scores. We attempted to reach a high rate of agreement on the five-point scale for each variable at each session. Observers were given further instructions concerning procedure. For example, assignments were made so that two observers would be a team. They were handed lists of subjects and given instructions concerning procedure to be followed in the schools such as introducing themselves to director and teacher (a letter was sent to each school beforehand informing the director about the teams, dates and times for observations); familiarizing themselves with the school; mixing with the children in an informal way before they were to begin observations; and finally, detailed instructions concerning the actual recording of the behavioral samples.

Observation Procedures

Observers were told to record in an appropriate place on the record sheet (see the appendix) the child's appearance, mannerisms, physical build, time they began and ended each recording, date, sex and code number of each child. Observations were made only in free play periods both indoors and out. Observers used a clipboard and stopwatch and tried to be unobtrusive as they recorded the child's actions and language. Language was recorded verbatim. Observers were instructed not to interpret behavior, but to accurately record what took place. After the behavior was written down, each observer would then rate the child on the fourteen variables on a five-point scale. Observers rated the children independently of each other.

Inter-rater reliability estimates were obtained on the ratings the observers made on the practice protocols and on the actual protocols they collected themselves in the first observational period. Rater reliability was excellent for both training period and for the first probe period. Examination of all rating pairs' agreements permitted identification of the one observer who showed systematic disagreement with each pair and with group ratings and this individual's data was rerated. Appendix provides examples of sample ratings from practice protocols. Table 2 provides statistical tests of the significance of differences of paired raters' scores for the February observations.

Members of the staff and selected observers were also trained in testing procedures for the administration of the Peabody Picture Vocabulary Test. The Barron Inkblot Test, the Predisposition to Imagination Questionnaire, and the Television Interview. The research assistant in charge of the observers and one of the directors of the project checked all scoring on these instruments. Testing took place before the observations began, and although there was some overlap most children were tested before the observations. Observations took approximately three weeks to complete.

Observer Training Sessions

December 1, 1977 - First Session

1. Introduction

   Project goals - details about project (schools - children involved).

   Personnel introduced.

2. Attendance taken - listing of names and addresses of interested people. Request for resumes to be submitted.

3. Showing of film, Pretending to introduce 3-4 year old age group in nursery school setting. Discussed age group activities. Distributed manual Instructions for Raters and Observers.

   Discussed variables and ratings, as outlined in manual. Answered questions regarding interpretation. In depth discussion of definitions and interpretations.

   Assigned the assessment of Protocol #3 in class--group rated it and we discussed ratings in class.

   Made assignment of Protocols #1 through #10 for next meeting on December 5th.

December 5, 1977 - Second Session

Reviewed the assigned ten protocols (five were covered in class in detail). In depth discussion about interpreting research variable and rating protocols. (Answers given to those not able to be covered). Invited observers to discuss at office questions still troubling them regarding ratings. Made additional assignment for session on December 12th, #17 - #23. Ratings to be entered on duplicate sheet.

Ratings were entered in duplicate forms and one form was collected as observer-trainee entered the session. Other rating-sheet was retained by observer for class use in discussing the assignment.

Make-up session for absentees was held in the office on December 8, 2:30 - 3:30 P.M. A review of the assigned protocols, #1-10, was held: interpretation of research variables and an in-depth discussion of the ratings given.

December 12, 1977 - Third Session

Review of protocols assigned during the second session. Discussed in depth interpreting the definitions of the research variables. Answers given to protocols #17-23 not covered during session.

Duplicate ratings collected at beginning of session for reliability check.

Film from N.Y.U. Library shown, Setting the Stage for Learning. Discussed nursery school setting. Discussed the behavior of the observer and the need to be unobtrusive in observations. Discussed play setting--need to record activities environment, equipment, materials, playmates, teacher interaction, etc., as seen in film.

Film was re-shown and observers were asked to record sand-box sequence of play, while viewing film, and rate. Actual protocol forms and rating sheets used to simulate field observation. Discussion of ratings and information needed to complete protocol.

Reviewed again the information needed to be included in the protocol--methods of rating, rules about not consulting with companion-observer.

Reviewed ways of assessing child from clues taken from facial expression, body movement, verbal clues.

Answered questions relative to observation techniques and variables to be assessed.

Make-up session for absentees scheduled in office on January 18, 3:45-4:45 P.M. to review assignment (protocols #17-23).

Fall 1977 Observer Training Sessions

Thursday, September 15, 1977

Kirtland Lounge 7:30 - 9:30 P.M.

Discussed nature of the research project, goals, methodology. Introduced personnel. Distributed Manual, Instructions for Raters and Observers.

Introduced and discussed variables to be evaluated, i.e., Imagination, Aggression, Interaction, etc. Define and discuss rating scale.

Discuss the protocols to be written, date to be recorded.

Distributed typed protocols from observations of previous research project. For practice, read one protocol and evaluated variables on scales to be used in present research. Discussed ratings group has given.

Assign 10 protocols for next meeting, to be rated in duplicate.

Monday, September 19, 1977

Homework assignment, duplicates of ratings, collected at beginning of session . Other rating sheet was kept by the observer for discussion in session).

Reviewed assignment of 10 protocols. Discussed in depth the ratings of 5 of them, and answered questions observers had regarding the ratings on the other 5.

Discussed definitions in depth of variables which were not yet understood.

Assigned 10 protocols for next session, to be rated in duplicate.

Tuesday, September 27, 1977

Reviewed the protocols assigned. Collected duplicates of ratings at beginning of session for reliability assessment. Other rating sheet retained by observer for discussion at session.

Discussed difficulties observers had with variable ratings. Answered questions about interpretation; more clarification regarding definitions.

Presented film; Pretending. Discussed characteristics of preschool children seen. Discussed characteristic preschool behavior.

Distributed Protocol forms to be used in field research and asked observers to rate play behaviors as seen in sequence from film Pretending (the block-building

Observation Training Session - January 23, 1978

(Includes observers from fall observation period as well as new observers.)

1. Circulated forms for observers to enter time availability and make changes on address, phone and transportation availability listed previously.

2. Discuss Mood definitions and review Cooperation and Interaction with Peers and Adults. (Variables 5, 6, 7 and 8).

3. Review protocols assigned.

4. View film The Child at Play (18 minutes) from N.Y.U. Film Library. Discuss. Rate (2) 10 minute sequences on protocol forms used for field observations. Discuss ratings of "Karl" and "Judy" seen in last segment of film (third part). Collect ratings to assess reliability.

5. Distribute General Information and Instructions for Observers and Observation Procedures. Discuss emphasizing the filling in of details at the end of the observation period (review information needed listed under Observation Procedures 5. a-b.). Discuss relationship with schools and behavior code with administration and in the classroom.

Have observers read material distributed and answer questions regarding information and instructions outlined.

sequence). Collected duplicates of ratings for reliability assessment. Discussed ratings with group.

Discussed procedures to be followed with schools, ratings, etc. per information given on printed General Information and Instructions for Observers and Observation Procedures.

The film, Setting the Stage for Learning, was shown. Raters were asked to assess sandbox-play sequence in film. Ratings were recorded in duplicate and one copy handed in for reliability check. The other, retained by the observer, for discussion at the session.

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RANK ORDER OF PROGRAMS FOR THE FOUR LOG PERIODS - 3 YEAR OLD FEMALES

	Program	Feb. 1977 1. N=26	April 1977 2. N=26	Oct. 1977 3. N=21	Feb. 1978 4. N=21	% Who Watched
1.	Sesame St.	19	18	18	18	78
2.	Brady Bunch	13	14	13	12	55
3.	Electric Co.	11	10	12	15	51
4.	Muppet Show	9	10	12	15	49
5.	Mister Rogers	11	10	12	11	47
6.	Flintstones	12	11	7	12	45
6.	Happy Days	12	10	8	12	45
8.	Game Shows	8	10	13	8	42
9.	Bugs Bunny	14	9	6	15	39
9.	Captain Kangaroo	9	13	6	9	39
11.	News	12	7	8	9	38
12.	Movies	8	4	3	6	33
13.	Laff-a-Lympics	11	5	8	5	31
14.	Donny and Marie	5	6	7	10	30
15.	Wonderama	8	8	5	3	26
15.	I Love Lucy	6	6	6	6	26
17.	Zoom	5	4	5	9	25
17.	Soap Operas	8	5	3	7	25
19.	Mickey Mouse	7	4	6	5	23
20.	Little Rascals	8	9	3	1	22
20.	Odd Couple	6	7	3	5	22
22.	Nancy Drew/Hardy	5	6	6	3	21
22.	$6 Million Man	3	6	8	3	21
24.	Talk Shows	6	2	3	8	20
24.	Bionic Woman	5	6	5	3	20
26.	Star Trek	6	4	3	5	19
26.	Krofft's Supershow	8	4	4	2	19
28.	Disney	7	4	4	2	18
29.	Banana Splits	6	1	3	5	16
30.	Emergency	3	2	2	4	12

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RANK ORDER OF PROGRAMS FOR THE FOUR LOG PERIODS - 4 YEAR OLD FEMALES

	Program	Feb. 1977 1. N=24	April 1977 2. N=23	Oct. 1977 3. N=19	Feb. 1978 4. N=20	% Who Watched
1.	Sesame St.	20	13	13	14	70
2.	Mister Rogers	16	11	10	11	56
3.	Electric Co.	16	14	8	9	55
4.	Captain Kangaroo	11	12	10	7	47
5.	Muppet Show	12	10	4	11	43
6.	News	13	7	6	9	41
7.	Brady Bunch	10	6	6	11	38
8.	Flintstones	10	4	8	9	36
9.	Zoom	8	8	8	6	35
10.	Mickey Mouse	9	3	8	7	31
11.	Bugs Bunny	11	7	2	3	27
12.	Donny and Marie	6	5	3	6	23
13.	Happy Days	8	5	1	5	22
14.	Wonderama	9	5	2	2	21
14.	Game Shows	8	3	2	5	21
16.	Laff-a-Lympics	8	3	2	4	20
16.	I Love Lucy	4	5	2	6	20
18.	Banana Splits	7	1	2	4	16
19.	Odd Couple	4	3	2	4	15
20.	Nancy Drew/Hardy	4	2	2	4	14
21.	Movies	3	1	2	5	13
21.	Star Trek	6	0	3	2	13
21.	Krofft's Supershow	6	2	0	3	13
21.	Talk Shows	3	1	2	5	13
21.	Bionic Woman	4	4	2	1	13
26.	Disney	5	2	0	2	11
26.	Soap Operas	3	2	1	3	11
26.	Little Rascals	3	5	0	1	11
29.	Emergency	3	0	1	1	6
29.	$6 Million Man	1	2	1	1	6

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RANK ORDER OF PROGRAMS FOR THE FOUR LOG PERIODS - 3 YEAR OLD MALES

	Program	Feb. 1977 1. N=36	April 1977 2. N=38	Oct. 1977 3. N=32	Feb. 1978 4. N=29	% Who Watched
1.	Sesame St.	28	26	20	21	70
2.	Electric Co.	21	22	17	17	57
3.	Mister Rogers	24	16	17	14	53
4.	Captain Kangaroo	20	18	15	14	50
5.	News	20	16	14	13	47
6.	Muppet Show	14	16	14	17	45
7.	Flintstones	15	14	10	12	38
8.	Zoom	15	11	14	7	35
9.	Brady Bunch	13	9	11	11	33
9.	Game Shows	9	11	13	12	33
11.	Bugs Bunny	15	12	5	8	30
12.	Happy Days	10	10	5	11	27
13.	Laff-a-Lympics	13	8	8	6	26
13.	$6 Million Man	10	10	10	5	26
15.	Star Trek	14	9	4	4	23
15.	Donny and Marie	9	10	5	7	23
17.	Disney	11	4	6	8	21
17.	Mickey Mouse	10	7	6	6	21
17.	Little Rascals	12	13	1	2	21
20.	Wonderama	11	7	5	4	20
20.	Movies	12	3	8	4	20
22.	Nancy Drew/Hardy	7	7	5	6	19
23.	Odd Couple	9	6	5	3	17
23.	I Love Lucy	8	5	5	5	17
25.	Banana Splits	8	4	3	7	16
25.	Emergency	7	6	3	6	16
25.	Bionic Woman	4	7	6	5	16
28.	Talk Shows	8	2	2	5	13
28.	Soap Operas	4	4	3	6	17
30.	Krofft's Supershow	5	4	4	2	11

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RANK ORDER OF PROGRAMS FOR THE FOUR LOG PERIODS - 4 YEAR OLD MALES

	Program	Feb. 1977 1. N=30	April 1977 2. N=33	Oct. 1977 3. N=29	Feb. 1978 4. N=29	% Who Watched
1.	Sesame St.	19	17	16	15	57
2.	Muppet Show	14	16	16	20	55
2.	Flintstones	18	15	16	18	55
4.	Brady Bunch	12	13	16	19	50
4.	Bugs Bunny	18	16	12	12	50
6.	Happy Days	15	12	11	10	40
7.	Laff-a-Lympics	13	11	11	11	38
8.	Game Shows	12	10	12	11	37
9.	News	11	9	8	14	35
9.	Mickey Mouse	14	6	11	12	35
9.	Banana Splits	17	9	7	10	35
12.	Electric Co.	18	12	11	11	34
13.	Captain Kangaroo	11	13	9	6	32
14.	Wonderama	16	10	7	5	31
15.	Movies	13	3	9	11	30
15.	I Love Lucy	10	5	7	14	30
15.	Disney	18	8	8	2	30
18.	$6 Million Man	6	9	12	8	29
19.	Nancy Drew/Hardy	6	6	12	10	28
20.	Mister Rogers	12	7	7	5	26
21.	Zoom	10	6	11	3	25
22.	Little Rascals	11	13	3	2	24
23.	Krofft's Supershow	9	7	5	7	23
23.	Donny and Marie	7	11	6	4	23
25.	Emergency	9	8	1	8	21
25.	Odd Couple	10	10	4	2	21
27.	Star Trek	10	4	5	5	20
28.	Talk Shows	5	4	3	7	16
29.	Soap Operas	6	2	4	3	12
30.	Bionic Woman	4	3	2	4	11

RANK ORDER OF PROGRAMS FOR THE FOUR LOGS PERIODS - TOTAL MALES

	Program	Feb. 1977 1. N=66	April 1977 2. N=71	Oct. 1977 3. N=61	Feb. 1978 4. N=59	% Who Watched
1.	Sesame St.	47	43	36	36	63
2.	Electric Co	39	34	28	28	50
3.	Muppet Show	28	32	30	37	49
4.	Flintstones	33	29	26	30	46
5.	News	31	25	22	27	41
5.	Brady Bunch	25	22	27	30	41
5.	Captain Kangaroo	31	31	24	20	41
8.	Mister Rogers	36	23	24	19	40
9.	Bugs Bunny	33	28	17	20	38
10.	Game Shows	21	21	25	23	35
11.	Happy Days	25	22	16	21	33
12.	Laff-a-Lympics	26	19	19	17	32
13.	Zoom	25	17	25	10	30
14.	Mickey Mouse	24	13	17	18	28
15.	$6 Million Man	16	19	22	13	27
16.	Wonderama	27	17	12	9	25
16.	Disney	29	12	14	10	25
16.	Movies	25	6	17	15	25
16.	Banana Splits	25	13	10	17	25
20.	Lucy	18	10	12	19	23
20.	Donny and Marie	16	21	11	11	23
20.	Nancy Drew/Hardy	14	13	17	16	23
23.	Little Rascals	23	26	4	4	22
24.	Star Trek	24	13	9	9	21
25.	Odd Couple	19	16	9	5	19
25.	Emergency	16	14	4	14	19
27.	Krofft's Supershow	14	11	9	9	17
28.	Bionic Woman	8	10	8	9	14
28.	Talk Shows	13	6	5	12	14
30.	Soap Operas	10	6	7	9	12

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RANK ORDER OF PROGRAMS FOR THE FOUR LOG PERIODS - TOTAL FEMALES

	Program	Feb. 1977 1. N=50	April 1977 2. N=49	Oct. 1977 3. N=40	Feb. 1978 4. N=41	% Who Watched
1.	Sesame St.	39	31	31	32	74
2.	Electric Co.	27	24	20	24	53
3.	Mister Rogers	27	21	22	22	51
4.	Brady Bunch	23	20	19	23	47
5.	Muppet Show	21	20	16	26	46
6.	Captain Kangaroo	20	25	16	16	43
7.	Flintstones	22	15	15	21	41
8.	News	25	14	14	18	39
9.	Happy Days	20	15	9	17	34
10.	Bugs Bunny	25	16	8	8	32
10.	Game Shows	16	13	15	13	32
12.	Zoom	13	12	13	15	29
13.	Mickey Mouse	16	7	14	12	27
13.	Donny and Marie	11	11	10	16	27
15.	Laff-a-Lympics	19	8	10	9	26
16.	Wonderama	17	13	7	5	23
16.	I Love Lucy	10	11	8	12	23
18.	Odd Couple	10	10	5	9	19
19.	Movies	11	5	5	11	18
19.	Soap Operas	11	7	4	10	18
21.	Talk Shows	9	3	5	13	17
21.	Bionic Woman	9	10	7	4	17
21.	Nancy Drew/Hardy	7	8	8	7	17
21.	Little Rascals	11	14	3	3	17
25.	Banana Splits	13	2	5	9	16
25.	Star Trek	12	4	6	7	16
25.	Krofft's Supershow	14	6	4	5	16
28.	Disney	12	6	4	4	14
28.	$6 Million Man	4	8	9	4	14
30.	Emergency	6	2	3	5	9

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RANK ORDER OF PROGRAMS FOR THE FOUR LOG PERIODS - TOTAL SAMPLE

	Program	Feb. 1977 1. N=116	April 1977 2. N=120	Oct. 1977 3. N=101	Feb. 1978 4. N=100	% Who watched
1.	Sesame St.	86	74	67	68	68
2.	Electric Co.	66	58	48	52	51
3.	Muppet Show	49	52	46	63	48
4.	Mister Rogers	63	44	46	41	44
5.	Flintstones	55	44	41	51	44
6.	Brady Bunch	48	42	46	53	43
7.	Captain Kangaroo	51	56	40	36	42
8.	News	56	39	36	45	40
9.	Bugs Bunny	58	44	25	28	35
10.	Game Shows	37	34	40	36	34
11.	Happy Days	45	37	25	38	33
12.	Zoom	38	29	38	25	30
13.	Laff-a-lympics	45	27	29	26	29
14.	Mickey Mouse	40	20	31	30	28
15.	Wonderama	44	30	19	14	21
15.	Donny and Marie	27	32	21	27	24
17.	I Love Lucy	28	21	20	31	23
18.	Movies	36	11	22	26	22
18.	$6 Million Man	20	27	31	17	22
20.	Banana Splits	38	15	15	26	22
21.	Disney	41	18	18	14	21
21.	Nancy Drew/Hardy	22	21	25	23	21
23.	Little Rascals	34	40	7	7	20
24.	Star Trek	36	17	15	16	19
25.	Odd Couple	29	26	14	14	19
26.	Krofft's Supershow	28	17	13	14	16
27.	Talk Shows	22	9	10	25	15
28.	Bionic Woman	17	20	15	13	15
29.	Soap Operas	21	13	11	19	15
29.	Emergency	22	16	7	19	15

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RANK ORDER OF PROGRAMS FOR THE FOUR LOG PERIODS - TOTAL 3 YEAR OLDS (MALE AND FEMALE)

	Program	Feb. 1977 1. N=62	April 1977 2. N=64	Oct. 1977 3. N=53	Feb. 1978 4. N=51	% WHO Watched
1.	Sesame St.	47	44	38	39	73
2.	Electric Co.	32	32	19	32	50
3.	Mister Rogers	35	26	19	25	46
3.	Captain Kangaroo	29	31	21	23	46
5.	Muppet Show	23	26	26	32	45
6.	News	32	23	22	22	43
7.	Brady Bunch	26	23	24	23	42
8.	Game Shows	17	21	36	20	41
9.	Flintstones	27	25	17	24	40
10.	Happy Days	22	20	13	23	34
11.	Bugs Bunny	32	21	11	12	33
12.	Zoom	20	15	19	16	30
13.	Laff-a-Lympics	24	13	16	11	28
14.	Donny and Marie	14	16	12	17	26
15.	$6 Million Man	13	16	18	8	24
16.	Mickey Mouse	17	11	12	11	22
17.	Movies	20	7	11	10	21
17.	Wonderama	17	15	10	7	21
17.	Star Trek	20	13	7	9	21
17.	Little Rascals	20	22	4	3	21
21.	Disney	18	8	10	10	20
21.	I Love Lucy	14	11	11	11	20
21.	Nancy Drew/Hardy	12	13	11	9	20
24.	Odd Couple	15	13	8	8	19
25.	Bionic Woman	9	13	11	8	18
26.	Soap Operas	12	9	6	13	17
27.	Talk Shows	14	4	5	13	16
27.	Banana Splits	14	5	6	12	16
29.	Krofft's Supershow	13	8	8	4	14
29.	Emergency	10	8	5	10	14

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RANK ORDER OF PROGRAMS FOR THE FOUR LOG PERIODS - TOTAL 4 YEAR OLDS (MALE AND FEMALE)

	Program	Feb. 1977 1. N=54	April 1977 2. N=56	Oct. 1977 3. N=48	Feb. 1978 4. N=49	% WHO WATCHED
1.	Sesame St.	39	30	29	29	61
2.	Muppet Show	26	26	20	31	50
3.	Electric Co.	34	26	19	20	48
4.	Flintstones	28	19	24	27	47
5.	Brady Bunch	22	19	22	30	45
6.	Bugs Bunny	29	23	14	15	39
7.	Mister Rogers	28	18	17	16	38
7.	Captain Kangaroo	21	25	19	13	38
9.	News	24	16	14	23	37
10.	Mickey Mouse	23	9	19	19	34
11.	Happy Days	23	17	12	15	32
12.	Laff-a-Lympics	21	14	13	15	30
12.	Game Shows	20	13	14	16	30
14.	Zoom	18	14	19	9	29
15.	Banana Splits	24	20	9	14	28
16.	Wonderama	25	15	9	7	27
17.	I Love Lucy	14	10	9	20	26
18.	Donny and Marie	13	16	9	10	23
18.	Movies	16	4	11	16	23
20.	Disney	23	10	8	4	22
20.	Nancy Drew/Hardy	10	8	14	14	22
22.	Krofft's Supershow	15	9	5	10	19
22.	$6 Million Man	7	11	13	9	19
24.	Little Rascals	14	18	3	3	18
24.	Odd Couple	14	13	6	6	18
26.	Star Trek	16	4	8	7	17
27.	Talk Shows	8	5	5	12	15
27.	Emergency	12	8	2	9	15
29.	Soap Operas	9	4	5	6	12
29.	Bionic Woman	8	7	4	5	12

Code #______________

P=parent(s)
O=other adult(s)
S=brother(s), sister(s)
C=other children

(1) hardly watches (2) occasionally watches (3) watches half the time (4) turns away occasionally but watches most of show (5) watches almost the whole show

THURSDAY, OCTOBER 6, 1977

Morning

5:45	(8)Davey & Goliath
6:00	(3)Barrio
	(4)Man to Woman
	(5)News
	(8)Eighth Day
6:10	(2)News
	(7)News
6:30	(2)Sunrise Semester
	(3)Teaching Children to Read
	(4)Not for Women ONly
	(5)To be Announced
	(7)Listen and Learn
	(8)Little Rascals
	(11)Little Rascals
6:45	(11)Little Rascals
7:00	(2,3)CBS News
	(4)Today
	(5)Quickdraw McGraw
	(7)Good Morning America
	(8)Munsters
	(9)News
	(11)Banana Splits
	(13)Lilias, Yoga and You
7:30	(5)Bugs Bunny
	(8)Dusty's Treehouse
	(9)PTL Club
	(11)Mighty Mouse
	(13)MacNeil/Lehrer Report
8:00	(2,3)Captain Kangaroo
	(5)Flintstones
	(8)Good Morning America
	(11)Tom and Jerry
	(20Today
	(49)Child Development
8:30	(5)Archies
	(9)Dick Tracy
	(11)Wacky Races
8:45	(13)Vegetable Soup
9:00	(2)To Tell the Truth
	(3)Mike Douglas
	(4)Phil Donahue
	(5)Green Acres
	(7)Stanley Siegel
	(8)Phil Donahue
	(9)Joe Franklin
	(11)Munsters
	(13,49)Sesame Street
9:30	(2) With Jeanne Parr
	(5)Bewitched
	(11)I Dream of Jeannie
10:00	(2,3)Here's Lucy
	(4,20)Sanford and Son
	(5)Partridge Family
	(7)Movie
	(8)Ryan's Hope
	(9)Romper Room
	(11)Get Smart
10:30	(2,3)Price is Right
	(4,20)Hollywood Squares
	(5)I Love Lucy
	(8)Edge of Night
	(11)Abbott and Costello
	(13,49)Infinity Factory
11:00	(4,20)Wheel of Fortune
	(5)Movie
	(7,8)Happy Days
	(9)Straight Talk
	(11)Lucy Show
11:30	(2,3)Love of Life
	(4,20)It's Anybpdy's Guess
	(7,8)Family Feud
	(11)700 Club

Afternoon

12:00	(2)Young and the Restless
	(3)News
	(4,20)Shoot for the Stars
	(7)The Better Sex
	(8)12 O'clock Live
	(9)News
	(13)Studio See
12:30	(2,3)Search for Tomorrow
	(4,20)Chico and the Man
	(7)Ryan's Hope
	(9)Topper
	(11)News
	(13)Electric Company
1:00	(2)Dating Game
	(3)Match Game
	(4)Gong Show
	(5)Midday
	(7,8)All My Children
	(9)Movie
	(11)Education Update
	(20)This is the Life
1:30	(2,3)As the World Turns
	(4,20)Days of our Lives
	(11)Ask Congress